JOINT OPERATIONAL FIRES IN THE OFFENSE: THE SOUTHWEST PACIFIC CAMPAIGN TO ISOLATE RABAUL

A Monograph

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After a decade of irregular warfare in Iraq and Afghanistan, the United States has limited experience in employing fires to achieve operational objectives against a peer opponent. General MacArthur and Admiral Halsey's offensive operations in the Southwest Pacific during World War II provide examples of how operational commanders used joint fires to support offensive operations. MacArthur advanced up the New Guinea coast and Halsey moved through the Solomon Islands in converging joint campaigns to isolate the Japanese base at Rabaul on the island of New Britain. This monograph examines how MacArthur and Halsey used fires in the course of the campaign. It examines four case studies within the broader campaign: Buna, MacArthur's first offensive; The Battle of the Bismarck Sea, a critical air operation against Japanese lines of communication; Operation Toenails, the invasion of New Georgia; and finally the isolation of Rabaul by MacArthur and Halsey. Both MacArthur and Halsey faced well-trained and equipped Japanese air, naval, and ground forces who contested Allied control of the air and seas. Examining how both of these commanders used fires to support their operations during this campaign provides an example of the crucial relationship between joint fires and maneuver for an operational commander.

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ABSTRACT

JOINT OPERATIONAL FIRES IN THE OFFENSE: THE SOUTHWEST PACIFIC CAMPAIGN TO ISOLATE RABAUL, by MAJ Kenneth R. York, 62 pages.

After a decade of irregular warfare in Iraq and Afghanistan, the United States has limited experience in employing fires to achieve operational objectives against a peer opponent. General MacArthur and Admiral Halsey's offensive operations in the Southwest Pacific during World War II provide examples of how operational commanders used joint fires to support offensive operations.

MacArthur advanced up the New Guinea coast and Halsey moved through the Solomon Islands in converging joint campaigns to isolate the Japanese base at Rabaul on the island of New Britain. This monograph examines how MacArthur and Halsey used fires in the course of the campaign. It examines four case studies within the broader campaign: Buna, MacArthur's first offensive; The Battle of the Bismarck Sea, a critical air operation against Japanese lines of communication; Operation Toenails, the invasion of New Georgia; and finally the isolation of Rabaul by MacArthur and Halsey.

Both MacArthur and Halsey faced well-trained and equipped Japanese air, naval, and ground forces who contested Allied control of the air and seas. Examining how both of these commanders used fires to support their operations during this campaign provides an example of the crucial relationship between joint fires and maneuver for an operational commander.

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ACRONYMS

AAF	Army Air Forces
ACTS	Air Corps Tactical School
AEF	American Expeditionary Force (World War I)
AIF	Australian Imperial Force
Airsols	Air Command, Solomons
BCD	Battlefield Coordination Detachment
CARL	Combined Arms Research Library
CINCPAC	Commander in Chief, Pacific
CGSC	U.S. Army Command and General Staff College
CNO	Chief of Naval Operations
COMSOPAC	Commander, South Pacific
CRA	Commander, Royal Artillery
DIVARTY	Division Artillery
DOD	Department of Defense
GHQ	General Headquarters
IJA	Imperial Japanese Army
IJN	Imperial Japanese Navy
JFC	Joint Force Commander
OIF	Operation Iraqi Freedom
PIR	Parachute Infantry Regiment
POA	Pacific Ocean Areas
PT	Patrol Torpedo (Boat)
RAAF	Royal Australian Air Force
RCT	Regimental Combat Team
RN	Royal Navy (United Kingdom)

RNZAF	Royal New Zealand Air Force
RNZN	Royal New Zealand Navy
RPV	Remotely Piloted Vehicle
SAMS	School of Advanced Military Studies
SOPAC	South Pacific Command
SWPA	Southwest Pacific Area
TACP	Tactical Air Control Party
MMAS	Master of Military Art and Science
USA	United States Army
USAAF	United States Army Air Forces
USAF	United States Air Force
USMC	United States Marine Corps
USN	United States Navy
WWI	World War I
WWII	World War II

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INTRODUCTION

> The artillery in this theater flies.
>
> —General George C. Kenney

The Armed Forces of the United States are emerging from over a decade of irregular warfare in Iraq and Afghanistan. Field artillerymen, rotary-wing attack aviators, and fixed wing tactical aviators from all the services share a common experience of combat where they served primarily as providers of tactical fires to small units. For the Army's field artillery branch in particular, the expertise resides primarily at platoon-level combat. Throughout most of the past decade of American experience in war, scattered artillery platoons provided lethal and non-lethal cannon and missile fires for mounted and dismounted maneuver patrols.[1] Similarly, rotary and fixed wing aircraft have done yeoman's work supporting ground forces, but have not faced a significant enemy air threat. Nor have remotely piloted vehicles (often referred to as "drones" in popular media) faced a significant lethal threat.[2]

A generation of officers now has little experience with the operational impact that fires can provide large unit and theater commanders, particularly in conventional offense and defense roles. Consequently, many of these officers lack an appreciation for the full range of capabilities and limitations of fires systems. Compounding this, from 2005 to 2013, the United States Army

[1]Stephen J. Maranian, "Field Artillery Fires in the Mountains of Afghanistan," *Fires* (September 2008): 34–36. The author's personal experience in Wasit Province, Iraq in 2008-09, Diyala Province, Iraq in 2011, and RC-East in Afghanistan in 2011-12 mirrors the dispersed tactical deployment of cannon platoons across a brigade operational environment as described in the article.

[2]Alan W. Dowd, "Drone Wars: Risks and Warnings," *Parameters* 42, no. 4 (Winter-Spring 2013): 7–16, http://www.strategicstudiesinstitute.army.mil/pubs/Parameters/Issues/WinterSpring_2013/1_Article_Dowd.pdf (accessed 12 January 2014). The term "drone" while incorrect, is increasingly accepted in the media as a generic term for remotely crewed, armed and unarmed, mobile equipment. For an example of this, see Spencer Ackerman, "Obama Swears Drone Surge Is Done | Danger Room | Wired.com," *Danger Room*, http://www.wired.com/dangerroom/2013/05/obama-drone-speech (accessed 20 January 2014). "Drone" implies no pilot or crew; RPVs are piloted, only from a remote location—an important distinction.

had no permanent fires headquarters above brigade level.[3] Commanders of divisions and higher echelon units had no experienced leader on their staff to advise them and their subordinate maneuver commanders regarding the operational capabilities of fires, nor did these commanders have fires assets under their direct control unless task organized for specific missions.[4]

Neither current Army nor current joint doctrine provides an explicit definition of operational fires. However, Joint Publication (JP) 3-0, *Joint Operations*, JP 3-09 *Joint Fire Support*, and JP 5-0, *Joint Operation Planning* each use the term several times. Differentiating between strategic, operational, and tactical fires can be difficult. For example, an aircraft destroying a bridge with a precision guided weapon can generate strategic effects if the bridge is critical for supplying a natural resource. The same aircraft accomplishes operational effects if the bridge is crucial for supplying the enemy's main effort in an attack, or tactical effects if the enemy is using the bridge to move a tank platoon to outflank a friendly defense. Milan Vego, Professor of Operational Art at the Naval War College, argues that operational fires are those fires that operational commanders use to generate "a decisive impact on the course and outcome

[3]U.S. Army Field Artillery School, "Fires Brigade War Fighting Forum, 6 October 2013," *Fires Knowledge Network*, 2013, https://www.us.army.mil/suite/doc/41414822 (accessed 14 December 2013). On October 3, 2013, General Raymond Odierno, Chief of Staff of the Army, directed the re-establishment of the Division Artillery headquarters for each division, these formations will be organized out of current fires organizations. Three existing fires brigades will become the artillery element for each of the three active corps.

[4]Toney Striklin, "Employment of the M982 in Afghanistan: US Army and Marine Corps Differences," *Fires* (February 2012): 13–16; Sean Bateman and Steven Hady, "King of Battle Once Again: An Organizational Design to Effectively Integrate Fires in Support of the Tactical, Operational and Strategic Force," *Fires* (March 2013): 23–25, 2; Sean MacFarland, Michael Shields, and Jeffrey Snow, "The King and I: The Impending Crisis in Field Artillery's Ability to Provide Fire Support to Maneuver Commanders" (Unpublished Memo to the Chief of Staff, United States Army, 2008). Major General Striklin is a former commander of the Field Artillery Center and School and Fort Sill, OK. He uses the different results of M982 (Excalibur) munitions in Afghanistan between Army and Marine units to illustrate the problems Army formations are having with fires compared to their Marine counterparts, which retained an artillery headquarters at each division to control fires. Colonels MacFarland, Shields, and Snow produced their White Paper for senior Army leadership and it was been widely distributed among the Field Artillery community.

of a campaign or major operation."[5] Historically, operational and large tactical unit commanders have employed operational fires to generate that decisive impact in order to facilitate operational maneuver. [6]

The Army is now transitioning from a decade of counterinsurgency warfare and considering how it will prepare to fight the next war. Modern operational commanders, such as commanders of joint task forces (JTF) formed to achieve operational objectives, must rely on subordinate units or air support assets to provide such fires. This limits the ability of subordinate units to plan for and use their tactical fire support assets in support of their own missions, since they must often release control of those assets to support their higher headquarters. The Army, as part of the joint force, should look at how it can provide future JTF commanders fires capabilities that enable maneuver force operations. Further, they should work to rebuild an appreciation for the flexibility ground based fires provide a JTF commander and demonstrate the value of ground based fires systems in the joint community.

Problem Statement

During and since World War II (WWII), the United States, in conjunction with Allied forces, conducted several large-scale offensive operations. In each case, operational commanders used fires systems, both aerial and ground artillery, to shape operations by limiting the ability of enemy forces to defeat their main or supporting efforts. Regardless of the type of operational environment, commanders and their staffs took into account similar considerations regarding the

[5]Milan N. Vego and US Naval War College, *Joint Operational Warfare: Theory and Practice* (Newport, RI: US Naval War College, 2009), VIII-59-VIII-60.

[6]Vego and US Naval War College, VIII-59-VIII-60, VIII-70 (note 1); Professor Vego describes the history of operational fires as a term in Endnote 1 to Chapter VIII. Vego also relies on two papers which propose and discuss operational fires for additional background information. Ralph G. Reece, "Operational Fires" (Air War College, 1989), 7-10, and William J. Rice, "Operational Fires–What's in a Name?" (Monograph, School of Advanced Military Studies, 1990), 21, 38. While these papers are over twenty years old, there is still no doctrinal definition for operational fires.

enemy. These considerations included the most effective use of joint fires (in conjunction with maneuver and protection) to shape the battlefield so that ground forces could accomplish their objectives. Given the current budgetary environment, the Department of Defense and the services must make difficult choices regarding the number and type of military systems (as well as personnel and units) that they will retain. The United States military has had limited experience over the past decade with operational fires in the offense and defense, making these choices both difficult and critically important. Understanding how commanders used fires to achieve an operational effect in the past, can clarify the capabilities we should retain for the future.

Purpose

The following study, through the analysis of a complex historical case where two commanders converged on the same operational objective, demonstrates that operational commanders used fires to achieve similar goals in different operational environments. These commanders used a variety of complementary fires capabilities, which came from aircraft, artillery systems, and warships to constrain the ability of enemy forces to assemble, move, and conduct effective offensive and defensive operations. This allowed Allied forces repeatedly to gain and hold a position of relative advantage over their Japanese opponents, allowing tactical units to engage the enemy on favorable terms and achieve operational objectives. It follows that modern commanders will similarly benefit from retention of a wide range of complementary fires capabilities as the United States military reorganizes in the coming post-war years.

Thesis

Operational commanders require fires to achieve a decisive impact on operationally significant targets. To create this decisive impact, commanders require multiple sources of fires to compensate for the technical limitations of each system. They also require a sufficient quantity of each system so that the fires can deliver enough mass so that the effect lasts sufficiently long, and

the targeted enemy force cannot recover before friendly maneuver forces are able to gain and maintain their objectives.

For example, throughout the maneuver phase of Operation Iraqi Freedom, coalition forces used aerial fires and artillery in concert to destroy enemy armored assets and allow maneuver forces to defeat the Iraqi Army quickly and decisively. After the initial phase of the operation, the V Corps commander, Lieutenant General W. Scott Wallace, highlighted how fires interacted with enemy and friendly maneuver. He said:

> There were episodes in the fight when operational maneuver caused the enemy to react; when the enemy reacted, it allowed us to employ joint fires against him, which, in turn, allowed our operational maneuver to be more successful. For example, around Baghdad, maneuver caused the enemy to move out of his defensive positions, and when he was moving, the Air Force identified him and we attacked him with aircraft and long-range rockets. The complementarity between fires, maneuver and reconnaissance was evident at the corps level down to the tactical level.[7]

Wallace had at his disposal a variety of system types including cannon, missile, rotary wing, and fixed wing fires that enabled him to strike when and where required. Access to a sufficient quantity of these systems and personnel well trained in their employment allowed Wallace, like many commanders before him, to mass fires and effects in a wide variety of combat situations.[8]

During WWII, commanders used systems allocated across a wide range of echelons and controlled them through clear command lines to shape the battlefield to gain relative advantage over their opponents. In fact, one can trace the roots of the joint fires procedures to the World War I (WWI). With experimentation and technological development during the interwar period, Army, Air Corps, Navy, and Marine Corps officers would bring these techniques to fruition during WWII. The number and variety of fires systems and units available to WWII commanders

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[7]Patrecia Slayden Hollis, "Trained, Adaptable, Flexible Forces = Victory in Iraq," *Field Artillery*, no. 5 (October 2003): 6, http://sill-www.army.mil/firesbulletin/archives/2003/SEP_OCT_2003/SEP_OCT_2003_FULL_EDITION.pdf (accessed 28 January 2014).

[8]Walter J. Boyne, *Operation Iraqi Freedom: What Went Right, What Went Wrong, and Why* (New York: Forge, 2003), 128-133; Hollis, 6-7.

illustrates the variety of capabilities they could call on to assist maneuver forces achieve their operational objectives. Examining how these commanders shaped their environment with fires and set the conditions for achieving their operational objectives may provide lessons for an operational commander leading a joint force against a peer competitor in the future.

Methodology

The experience of the American Expeditionary Force in WWI sets the stage for doctrinal development in each of the armed services during the interwar years. A review of the evolution of fires doctrine across the services during this period, and the tactical and operational capabilities of emerging long-range aerial and surface fires systems helps explain the nature of both Army doctrine for offensive operations, and service-specific views and doctrine governing the use of their various fires assets. This review of WWI and interwar fires doctrine sets the stage for an analysis of operational fires across four case studies occurring before and during Operation Cartwheel, a campaign to defeat Japanese forces in the southwest Pacific by isolating their main base at Rabaul, New Britain. Examining Cartwheel, an offensive campaign that required extensive use of joint forces against a skilled peer adversary, can establish how General MacArthur used operational fires to help him achieve his goals and provide a basis for future study on how a joint force commander can use fires in future.

The first case will examine fires in support of operations to seize the Buna-Gona area on the northwest coast of New Guinea. The second case examines fires supporting a complicated amphibious operation, Operation Toenails, the campaign to seize New Georgia and associated islands to prepare for operations against Rabaul. The Battle of the Bismarck Sea is the third case; this was an aerial operation to interdict Japanese shipping permanently from Rabaul to eastern New Guinea. Finally, the paper will examine how General MacArthur and Admiral Halsey used fires to support their maneuver and isolate Rabaul from its subordinate forces as well as its sea lines of communications (SLOC) to other Japanese bases. Examining the Cartwheel campaign

allows modern observers to understand how commanders can employ joint operational fires against a peer enemy in a non-permissive air and sea environment. The American and Allied forces in the southwest Pacific achieved their objectives in the face of determined opposition from a well-trained, professional, and experienced foe.

Evaluation of the cases will use three criteria from *JP 3-09* essential to the effective employment of operational fires. While the technical conduct of fires by a particular asset differs little whether the target is strategic, operational, or tactical, these criteria are particularly important for achieving the decisive impact operational commanders require from operational fires.

Synchronization with Maneuver Forces. Fires must be positioned and coordinated with maneuver forces in time and space so that fires arrive on the correct enemy location at a time where they have a maximum effect on the enemy. Commanders synchronize fires with maneuver forces to place fires on the correct target at the appropriate time and make "…the defeat of larger enemy forces feasible and enhances the protection of friendly forces."[9]

Unity of Effort. In the context of providing joint fires, unity of effort, the "coordination and cooperation" of fires describes the results of vertical and horizontal integration of fires to meet the operational commander's intent. [10] Fires providers coordinate between themselves and with higher and subordinate fires elements to ensure that maneuver forces have sufficient fires to accomplish the mission. This coordination avoids redundancy after fires achieve the desired effect. Army Battlefield Coordination Detachments (BCD) and Air Force Tactical Air Control Parties (TACP) are examples of modern organizations that exist, among other reasons, to provide unity of effort for fires between the various services. For operational fires, unity of effort ensures

[9]Joint Chiefs of Staff, Joint Publication 3-09, *Joint Fire Support* (Washington, DC: Government Printing Office, 2010), I-4.

[10]Joint Chiefs of Staff, Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated Terms* (Washington, DC: Government Printing Office, 2010), 278.

that appropriate fires systems are available and capable of striking targets when the operational commander requires.[11]

Assessment. Commanders and their staffs must continuously assess how and if fires are creating the broader effects the commander requires to achieve their operational objective. While assessment of tactical fires focuses on factors such as physical results, an operational assessment looks at broader effects such as whether employed fires are facilitating the movement of maneuver forces or preventing enemy forces from impeding friendly accomplishment of operational objectives.[12]

Background

After the end of WWI, the armed forces of the United States faced a number of significant challenges. After its costly involvement in what writer H. G. Wells described as "the war to end all wars," the United States government had little political appetite or public support for maintaining a large standing army.[13] The force that fought WWI quickly shrank to a fraction of its wartime size and had to adapt to a minimal budget and a public wary of the threat it seemed to pose to their isolationist stance. In the Pacific, the Army and Navy faced the challenge of defending the Philippines with the ever-present threat of Japan, which spent the ensuing years consolidating its control over the former German islands in the central Pacific. United States War and Navy Department planners saw Japan as America's primary military threat throughout the

[11]Joint Chiefs of Staff, Joint Publication 3-09, *Joint Fire Support*, I-3-I-4, II-4; Joint Chiefs of Staff, Joint Publication 3-09.3, *Close Air Support* (Washington, DC: Government Printing Office, 2009), II-16.

[12]Joint Chiefs of Staff, Joint Publication 3-09, *Joint Fire Support*, I-3, III-16-III-17.

[13]Kathleen Hall Jamieson, *Eloquence in an Electronic Age: The Transformation of Political Speechmaking* (New York: Oxford University Press, 1988), http://site.ebrary.com.lumen.cgsccarl.com/lib/carl/docDetail.action?docID=10142172 (accessed 20 January 2014), 99. H. G. Wells originated the term "war to end all wars" in 1914, however President Wilson used the phrase publically and the term is associated with him.

interwar period, but had little real strength to back up their many plans to defeat Japan in the event of war.[14]

In 1920, Congress passed a new National Defense Act, which implemented a significant number of structural reforms that standardized the Regular Army, National Guard, and Organized Reserve (later the Army Reserve) and modernized the organization of the Army and the Air Service. However, over nearly the next two decades, Congress never approved a budget sufficient to fill the authorized units; the United States Army remained at just over half its authorized strength throughout this period, and had minimal funds for arms procurement or weapons development programs. This forced Army leaders to make hard choices about personnel strength and distribution, organizational structure, and training priorities throughout the interwar period. Additionally, the Army had to deal with internal dissent from members of the Air Service (renamed in 1926 the United States Army Air Corps), who aspired to independence like their counterparts in Britain's Royal Air Force, and routinely sought a disproportionately high portion of the limited military budget appropriated by Congress.[15]

While the Army faced budget and force structure constraints, it still benefited from a sizable pool of Regular Army personnel who possessed significant intellectual capital. The Army's intellectual institutions—primarily the Command and General Staff College and the Army War College—digested the lessons of World War I and attempted to identify the implications for the future. The Army revised its doctrine continuously during the interwar

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[14]Edward S. Miller, *War Plan Orange: The U.S. Strategy to Defeat Japan, 1897-1945* (Annapolis, MD: Naval Institute Press, 1991), 2-3.

[15]William O. Odom, *After the Trenches: The Transformation of U.S. Army Doctrine, 1918-1939* (College Station: Texas A&M University Press, 1999), 16-18, 22; Lonnie B. Adams III, "The Interwar Period: Lessons from the Past" (military studies program paper, Army War College, Carlisle Barracks, PA, 1992), http://oai.dtic.mil/oai/oai?verb=getRecord &metadataPrefix=html&identifier=ADA251293 (accessed 15 December 2013); Robert T. Finney and USAF Historical Division, *History of the Air Corps Tactical School, 1920-1940* (Air Force Historical Studies, Research Studies Institute, Air University, March 1955), http://www.afhra.af.mil/shared/ media/document/AFD-090602-019.pdf (accessed 12 December 2013), 7, 11.

period, both formally in doctrinal manuals and informally in professional journals, educational institution curricula, and other means of professional discourse. Changes centered on the implications of technological advances, particularly the expanding capabilities and roles aircraft would play on the future battlefield. Within the artillery community, several boards analyzed the lessons from the war. One board, chaired by Brigadier General Andrew Hero Jr., studied the employment of artillery in American Expeditionary Force operations. Another board, chaired by Brigadier General William Westervelt, sought to anticipate the future requirements of the artillery force based on its successes and shortcomings during World War I. Understanding the budget constraints of the post-war Army, the Westervelt board identified ideal requirements as well as the legacy systems that the Army would use to fill requirements until funding existed to allow development of new artillery systems. Both boards agreed that the Army must transition from horse drawn to motorized artillery formations. Other, more broadly focused post-war boards reviewed the organizational structure of divisions, corps, and field armies. They determined that corps and field armies needed robust artillery to neutralize enemy artillery and inhibit enemy maneuver and logistics.[16]

The Westervelt Board recognized that large unit commanders required means to influence tactical engagements to improve their chances of achieving the goals of their operations and campaigns. The board report noted that all echelons from the division to field army "should have guns and howitzers of such mobility, power, variety, and number to ensure success of the mission . . ."[17] Westervelt and his board apparently understood implicitly what modern doctrine explicitly states: "the application of fires can assist in creating the desired effects to attain an

[16]Odom, 7-8; McKenney, 126-128; Boyd L. Dastrup, *King of Battle: A Branch History of the U.S. Army's Field Artillery* (Fort Monroe, VA: Office of the Command Historian, US Army Training and Doctrine Command, 1992), 180-184. McKenney, 142-143.

[17] Dastrup, *King of Battle*, 183.

objective."[18] Providing large unit commanders with heavy artillery capable of long-range fire gives them a mechanism that they can use to enable subordinate maneuver forces to seize the initiative, strike enemy forces prior to direct fire engagement, and execute offensive or defensive operations and campaigns on their terms, not the enemy's.[19]

Providing long-range fires capability solved only one of many issues identified after the war. The field artillery also needed to develop a means to identify targets quickly and accurately. Both the Allied and German armies recognized that friendly artillery too often killed the troops it intended to support. The field artillery community strove throughout the interwar period to improve both the responsiveness and accuracy of artillery. Even at the slow pace of advance of a WWI offensive, field artillery lacked the mobility necessary to provide responsive and effective fire support to infantry in the attack. As one commander noted shortly after the war:

> …our artillery was fine in carrying out an operation which could all be planned and laid out beforehand, but that when it was required to act in situations which had not been foreseen and planned beforehand, it fell down. The difficulties that we are encountering today are due simply to the fact that when the infantry encounters, unexpectedly, resistance which requires artillery fire such fire cannot be obtained promptly and accurately.[20]

Throughout the war, in addition to artillery's relative immobility, another limiting factor in fire support remained the inability to identify targets and transmit their location to firing units. With the exception of pre-planned fires, battery commanders rarely could place effective fires on

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[18]Joint Chiefs of Staff, Joint Publication 3-09, *Joint Fire Support*, I-2.

[19]Dastrup, *King of Battle*, 183; Dave Wellons, "Direct Fire to Indirect Fire: Changing Artillery for the Future" (Monograph, School of Advanced Military Studies, Fort Leavenworth, KS, 2000), http://oai.dtic.mil/oai/oai?verb=getR ecord&metadataPrefix=html&identifier=ADA389830 (accessed 14 December 2013), 18. Lieutenant Colonel Wellons noted that providing general support artillery to higher echelons "provided the general headquarters commander the additional fires he needed to influence the battlefield during large operations."

[20]John B. Anderson, "Are We Justified in Discarding 'Pre-War' Methods of Training?" *The Field Artillery Journal* 9, no. 2 (June 1919): 222–230.

enemy forces, nor could senior commanders concentrate the fires of battalion- or larger-echelon artillery units.[21]

A striking division existed between the lessons that the Army Air Service championed after the war compared to the rest of the Army, leading the Air Service to push for a vastly expanded military role for aircraft (and funding for developing advanced aircraft for this purpose). The Air Service drew on theoretical concepts developed by military aviation advocates around the world, including Guilio Douhet, Alexander de Seversky, and most notably, the Air Service's own Brigadier General William Mitchell. Mitchell's passion for his views contributed to his court-martial in 1925 for insubordination; but prior to that incident, Mitchell embedded deeply into the mindset of the Air Service his view that airpower should be centrally controlled by aviators, not ground commanders.[22]

Mitchell, like other particularly strident airpower advocates of the era, argued, "the destinies of all people would be controlled through the air."[23] Long-range bombers could strike at the enemy in both a more economical and a more decisive manner than ground troops—saving lives by avoiding the attrition warfare of WWI while forcing the enemy to a rapid surrender by devastating his economy and ability to wage war. This would eliminate the need for large armies and navies—but of course, it assumed air superiority, which required possession of more and

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[21]John R. Walker, "Bracketing the Enemy: Forward Observers and Combined Arms Effectiveness during the Second World War" (Ph.D. dissertation, Kent State University, Kent, OH, 2009), https://etd.ohiolink.edu/ap:10:0::NO:10: P10_ACCESSION_NUM:kent1248041184, (accessed 12 December 2013), 9.

[22]Thomas H. Greer, *The Development of Air Doctrine in the Army Air Arm, 1917-1941* (Washington, DC: Office of Air Force History, US Air Force, 1985), http://www.afhra.af.mil/shared/media/document/AFD-090601-130.pdf (accessed 14 December 2013); Douglas C. Waller, *A Question of Loyalty: Gen. Billy Mitchell and the Court-Martial That Gripped the Nation* (New York: HarperCollins Publishers, 2004), 359. Mitchell's influence was pervasive, while his claims were recognized by other Air Corps leaders as technologically unfeasible, they were viewed as goals for the future. Once Mitchell was convicted, he served as a useful martyr for airpower advocates such as Lieutenant Colonel Henry "Hap" Arnold, future Chief of the Army Air Forces during WWII.

[23] William Mitchell, *Winged Defense: The Development and Possibilities of Modern Air Power--Economic and Military* (Tuscaloosa, AL: University of Alabama Press, 2009), 3.

better aircraft than any potential future enemy. Upon conviction by court martial, Mitchell's influence outside the Air Service waned. Inside, his disciples focused on building the capability to strike deep into enemy territory with large bombers, a focus that consumed most of the Air Corps' intellectual energy throughout the 1930s. Mitchell influenced subsequent generations of American aviation officers who gravitated toward strategic strike on population centers and industry as a means to win war through use of air power alone.[24]

Almost unnoticed, other air officers, while not contradicting Mitchell's arguments for the dominance of airpower, began to look at the capabilities of airpower differently. Many officers who attended the Command and General Staff College at Fort Leavenworth, Kansas and the Air Corps Tactical School at Maxwell Field, Alabama during the interwar period recognized airpower's potential for supporting operational maneuver. For example, Major George Kenney, an instructor at the Air Corps Tactical School who in WWII would become General MacArthur's air commander and confidant, saw that airpower had a role beyond the purely strategic one envisioned by Mitchell. He argued that attack aviation aircraft should strike at enemy ground forces to impede their movement towards the battlefield.[25] The debate regarding the relative degree of effort air forces should devote to strategic bombing versus support of ground forces continued throughout the interwar period. Army school exercises, however, continued to include requirements for airpower to provide both direct support to ground forces, interdiction, and strategic bombing missions to restrict the ability of enemy forces to maneuver and sustain

[24]Ibid., 98-99; David MacIssac, "Voices from the Central Blue: The Air Power Theorists," in *Makers of Modern Strategy: From Machiavelli to the Nuclear Age*, eds. Peter Paret, Gordon Alexander Craig, and Felix Gilbert (Princeton, NJ: Princeton University Press, 1986), 633-34; Greer, 16-17. For details of the issues surrounding Mitchell's court-martial see Fred L. Borch, "Lore of the Corps: The Trial by Court-Martial of Colonel William 'Billy' Mitchell," *The Army Lawyer* (January 2012): 1–5. Commonly described as a Brigadier General, Mitchell was actually a Colonel who was frocked to Brigadier General due to his duty position.

[25]Michael R. Matheny, *Carrying the War to the Enemy: American Operational Art to 1945* (Norman, OK: University of Oklahoma Press, 2011), 103-105, 108; Thomas E. Griffith, *MacArthur's Airman: General George C. Kenney and the War in the Southwest Pacific* (Lawrence, KS: University Press of Kansas, 1998), 25-27.

themselves. In a resource-scarce environment, each side of the debate wanted to focus on what they perceived as the core mission of airpower. Notably, both sides understood the advantage inherent in establishing control of the air as a critical first step before either strategic or operational strike missions could occur.[26]

The Navy drew its theoretical inspiration during this period primarily from American naval theorist Alfred Thayer Mahan. Mahan argued, and most naval leaders fervently believed, that the United States Navy fulfilled the primary responsibility of maintaining a concentrated and powerful fleet to protect "very important transmarine interests."[27] These officers asked how, when constrained by severely reduced budgets and various treaties limiting the size of navies, they could maintain dominance over, or even parity with, other naval powers. The United States Navy (and Marine Corps) struggled to decide how to allocate limited budget dollars effectively to prepare for a war against an undefined foe. The Navy based its interwar plans for war in the Pacific on the assumption that Japan would act as the greatest threat to these transmarine interests, specifically the trade routes to the Philippines and China. To counter this perceived threat, Navy planners envisioned a powerful fleet fighting its way across the Pacific, seizing island bases along the way to defeat the Japanese fleet, and ultimately besieging Japan, thereby forcing the island nation to surrender. The Marine Corps, a separate service within the Navy Department, had begun to experiment with amphibious operations before WWI. In the context of navy planning, Marine Corps leaders saw amphibious warfare and the necessity to seize these forward bases as a way to maintain their existence in a budget-constrained era.[28]

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[26]Matheny, 105.

[27]Philip A. Crowl, "Alfred Thayer Mahan: The Naval Historian," in *Makers of Modern Strategy: From Machiavelli to the Nuclear Age*, eds. Peter Paret, Gordon Alexander Craig, and Felix Gilbert (Princeton, NJ: Princeton University Press, 1986), 459-460, 462.

[28]Edward Miller, 3-5, 14-18; Allan Reed Millett, *Semper Fidelis: The History of the United States Marine Corps* (New York: Free Press, 1980), 322-327-329. For a counterargument on Mahan's influence on the actual Pacific War see Crowl, 475-476.

To support these operations, the Navy and Marine Corps looked at fires very differently than the Army and the Air Corps did. The Navy, partly for technical reasons, was content to provide area bombardment with ship mounted high velocity cannon. For precision, the Marine Corps turned to close air support from aircraft assigned to their own organizations. Experience of small-scale combat in Latin America aided Marine Corps development of this capability.[29] Key leaders in the Navy also debated what type of ships they should invest in as the centerpiece of naval power. Many of these leaders, often referred to as the traditionalists, saw the battleship as the key to a successful fleet engagement. In stark contrast to this view, enough naval officers saw potential in airpower to ensure that the Navy devoted adequate resources to develop aircraft carriers. The aircraft on board these ships would provide long-range scouting and fires for the fleet. This latter group of innovators ensured that the Navy gained the capability to provide operational fires from the aircraft carrier and its aircraft, as they matured towards the end of the interwar period and improved by necessity after the Pearl Harbor attack.[30]

Each in their own way, the Navy and Marine Corps advocates of carrier aviation and close air support, as well as Major Kenney and his peers in the Air Corps, all worked towards goals similar to those of their Army artillery counterparts. Each saw their respective fires systems as a means to place enemy forces at a disadvantage and not just win battles, but also achieve the goals of operations or campaigns. Fires, properly placed on a key enemy target, could restrict an enemy's ability to strike American forces on favorable terms. In the offense, effective fires would force enemy formations outside the range of direct fires to react and lose their ability to gain initiative over American forces.[31]

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[29]Millett, 332-333.

[30]Vego and US Naval War College, VIII-59; Millett, 334-335; Thomas Wildenberg, *All the Factors of Victory: Admiral Joseph Mason Reeves and the Origins of Carrier Airpower* (Washington, DC: Potomac Books, 2003), 159-164.

[31]Griffith, 27.

THE STRATEGIC CONTEXT IN THE SOUTHWEST PACIFIC

Geography and Terrain

The operational area for Cartwheel (Figure 1) encompassed the eastern end of the island of New Guinea, the Bismarck Sea, the Bismarck Archipelago, the Solomon Sea, and the bulk of the Solomon Islands. It stretches almost 700 miles from north to south and over 1,200 miles from east to west. The thick, almost impenetrable, jungle terrain common across the entire region posed a significant challenge to tactical operations. Advancing ground forces could not identify sophisticated Japanese defensive positions until they were already into kill zones covered by interlocking fields of fire. This terrain, combined with poor maps, made accurately locating targets for fires extremely difficult. This complicated efforts to place fires precisely onto a target such as a bunker, which frequently required a direct hit to achieve any meaningful effect.[32]

[32]John Miller, *Cartwheel: The Reduction of Rabual* (Washington DC: Government Printing Office, 1959), 22-24; Robert C. Gildart, "Artillery on New Georgia," *Field Artillery Journal* 34, no. 2 (February 1944): 86-87, http://sill-www.army.mil/firesbulletin/archives/1944/FEB_1944/FEB_1944_FULL_EDITION.pdf (accessed 23 March 2014).

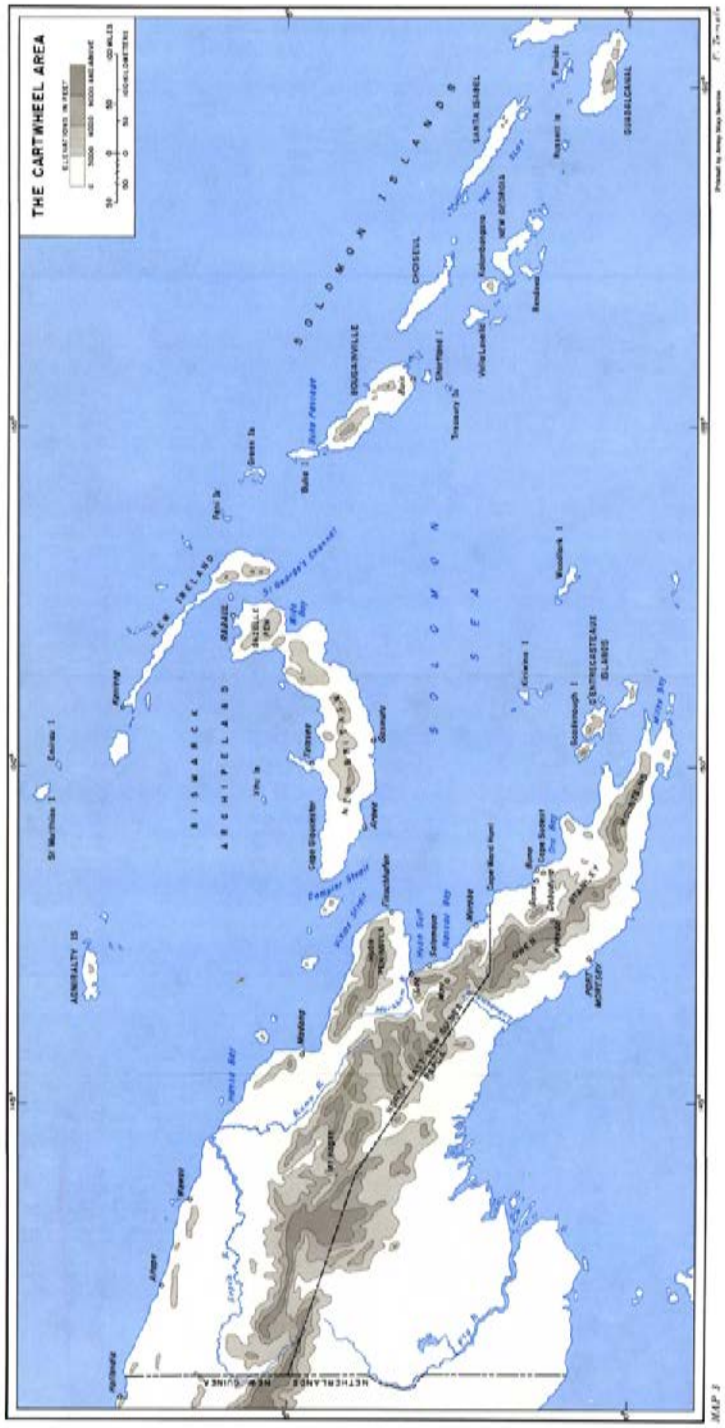

Figure 1. The Cartwheel Area

Source: John Miller, *Cartwheel: The Reduction of Rabaul* (Washington, DC: Government Printing Office, 1959), 23

On New Guinea, the Papuan Peninsula is the dominant terrain feature. The interior is mountainous, with some locations exceeding 13,000 feet in elevation, running from the northwest to the southeast down the spine of the peninsula. During the war, there were no roads across the island and only a few trails. This limited the ability of ground forces to maneuver in the interior and confined surface lines of communication and large scale military operations primarily to the coast.[33]

Japanese Strategic Interests

In 1941, concurrent with their air strike on Pearl Harbor and the attacks on the Philippine Islands, British Malaya, and the Dutch East Indies, the Japanese mounted an offensive into the Southwest Pacific region. Japanese industry had exploded during the 1930s, increasing fivefold over the decade. Thus, the Japanese coveted the natural resources of the region, which included "rich deposits of oil, rubber, tin, bauxite."[34] However, after WWI, when the victorious Allies allocated the former German colonies for administration, Japan received only the German islands north of the equator. Australia, through a League of Nations mandate, received control of the islands south of the equator and effectively excluded Japan from these resources.[35]

When the Japanese launched their broader war to seize the Dutch East Indies, they also conducted a concurrent advance southeast toward Australia in conjunction with the main Japanese effort. This advance was to seize New Guinea, the Bismarck Archipelago, and the Solomon Islands. Japanese forces in this region would inhibit communication between Australia

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[33]Samuel Milner, *Victory in Papua: United States Army in World War II - The War in the Pacific* (Washington DC: Government Printing Office, 1957), 56-58.

[34]Louis Morton, *Strategy and Command: The First Two Years*, The United States Army in World War II (Washington, DC: US Government Printing Office, 1962), 54.

[35]Australian War Memorial, *Japanese Army Operations in the South Pacific Area: New Britain and Papua Campaigns, 1942-43*, trans. Steven Bullard (Canberra: Australian War Memorial, 2007), ii. For a description of the conflict between Japanese and Australian post WWI territorial goals, see Henry P. Frei, *Japan's Southward Advance and Australia: From the Sixteenth Century to World War II* (Honolulu: University of Hawaii Press, 1991), 101-102.

and the United States and provide Japan the option of seizing key locations in northern Australia later. The Japanese understood that the Australians would not only resist, but with the likely assistance of the United States, attempt to recapture seized territory.[36]

Japanese Objectives and the Importance of Rabaul

By February of 1942, Japanese forces had defeated the limited forces the Australians had deployed north of New Guinea. They rapidly seized Rabaul on New Britain and established an air and sea base at this large natural harbor with two existing airfields on the northwest side of this island. Japanese forces had secure lines of communication through Japanese controlled waters to their main Pacific base at Truk, 812 miles (1,306 kilometers) to the north. Japan also landed significant Army elements on the northeast coast of New Guinea with the intent of conducting an overland assault on Port Moresby; the capital of the Territory of Papua and the site of airfields, a port, and an anchorage. Possession of Rabaul provided the Japanese the ability to stage forces there to both attack toward Port Moresby on New Guinea on one hand, and on the other, control the Solomons Island chain to the southeast, allowing Japanese air and sea forces to strike into the Coral Sea and threaten the lines of communication between Australia and the United States.[37]

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[36]Frei, 160-174; Tanaka Hiromi, "Japan in the Pacific War and New Guinea," *From a Hostile Shore: Australia and Japan at War in New Guinea*, 2004, http://ajrp.awm.gov.au/AJRP/AJRP2.nsf/5d7f819ab5cab102ca2565f400824fcc/404d5f488391d742ca256ea700157d47 (accessed 13 October 2013), 28–40. The wisdom of invading Australia was a source of contention and prolonged discussion between elements of the Japanese Army and Navy. Ultimately a final decision was postponed, but with the defeat of the Navy at Midway in June 1942, the question of invading parts of Australia was effectively moot.

[37]Hiromi, 34. Truk has been since renamed to its indigenous name of Chuuk. The island is part of the modern day Federated States of Micronesia. Samuel Milner, *Victory in Papua: United States Army in World War II - The War in the Pacific* (Washington, DC: US Government Printing Office, 1957), 5-6; Ronald H Spector, *Eagle Against the Sun: The American War With Japan* (Vintage Books, 1985), 154-155; Australian War Memorial, *Japanese Army Operations in the South Pacific Area*., 1. For a detailed discussion of the Japanese offensive see Dudley McCarthy, *South-West Pacific Area - First Year Kokoda to Wau* (Canberra: Australian War Memorial, 1959), chs. 2-11.

Allied Strategic Objectives

During World War II, the Southwest Pacific was a secondary theater for the Allies. President Roosevelt reaffirmed his commitment to the defeat of Germany first in July 1942, stating that the job in the Pacific was to fight "a successful holding war."[38] Available aircraft, ships, and troops would go east to build combat power for the strategic bomber offensive against Germany, the invasion of North Africa, and to support the Soviet Union's struggle against Germany. The Pacific Theater would have to rely on the limited forces that could be spared.[39]

On 1 July 1942, the Joint Chiefs of Staff (JCS) issued a directive for the Pacific Theater. The objective would be seizure and occupation of the area containing the islands of New Britain, New Ireland, and New Guinea by Allied forces. The directive mandated three tasks:

> a. TASK ONE. Seizure and occupation of SANTA CRUZ ISLANDS, TULAGI, and adjacent positions.
>
> b. TASK TWO. Seizure and occupation of the remainder of the SOLOMON ISLANDS, of LAE, SALAMAUA, and Northeast Coast of NEW GUINEA.
>
> c. TASK THREE. Seizure and occupation of RABAUL and adjacent positions in the NEW GUINEA-NEW IRELAND Area.[40]

Admiral Halsey's forces accomplished Task One when they defeated the Japanese attempt to place an airfield on the island of Guadalcanal, the largest of the Santa Cruz Islands, after a seven-month campaign. As difficult as that task was, the other two tasks would require significantly more time and combat power to accomplish.[41]

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[38]Louis Morton, *Strategy and Command: The First Two Years* (Washington DC: Government Printing Office, 1962), 310.

[39]Maurice Matloff and Edwin M. Snell, *Strategic Planning for Coalition Warfare: 1941-1942* (Washington, DC: Government Printing Office, 1953), 9-10; Morton, 308-310; Gavin Long, *MacArthur as Military Commander* (London: Batsford Van Nostrand, 1969), 121-124.

[40]Joint Directive for Offensive Operations in the Southwest Pacific Area Agreed upon by the United States Chiefs of Staff, 2 July 1942, quoted in Morton, 619.

[41]Ibid., 301-302.

On New Guinea, General Douglas MacArthur, the Southwest Pacific commander, defeated the Japanese attempt to seize Port Moresby when Australian and American forces blunted the Japanese 18th Army offensives at Milne Bay on the east end of New Guinea in early September 1942, and concurrently, Australian forces defeated Japanese overland attacks down the Kodoka Track. The track was an unimproved trail that provided the only overland route from the northeast coast of the island to Port Moresby. General MacArthur decided to counterattack with an Australian division and part of an American division to retake the Buna-Gona area. This would prevent the Japanese from building an airfield, and eliminate the threat of another attack down the track.[42]

Allied Command Structure

The Joint Chiefs of Staff split the Pacific into two theaters due to inter-service rivalry and mistrust. They gave command of the Pacific Ocean Areas (POA) to Admiral Chester W. Nimitz, commander of the Navy's Pacific Fleet. His command, subdivided into North, Central, and South Pacific Areas, encompassed the bulk of the Pacific Ocean. General MacArthur commanded the Southwest Pacific Area (SWPA), an area including the Philippines, Australia, and the bulk of the East Indies.[43]

Operation Cartwheel would cross the boundary between POA and SWPA (Figure 2). To resolve the ensuing dispute over which commander would control the operation, the Joint Chiefs of Staff placed overall command of the operation under General MacArthur. Admiral William F.

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[42]Dorris C. James, *The Years of MacArthur, Volume II: 1941-1945*, vol. 2, 3 vols. (Boston: Houghton Mifflin, 1976), 98, 119-121, 153-154; John Miller, *Guadalcanal: The First Offensive* (Washington, DC: US Government Printing Office, 1949), 350. For a detailed discussion of Japanese operations during this period, see Australian War Memorial, *Japanese Army Operations in the South Pacific Area*. For the Australian perspective and operations see McCarthy, and for American operations, see Milner.

[43]Morton, 244-249; Miller, *Cartwheel*., 2-5.

"Bull" Halsey, one of Nimitz' trusted subordinates, would command the South Pacific (SOPAC) under Nimitz' overall command, but receive strategic direction from MacArthur.[44]

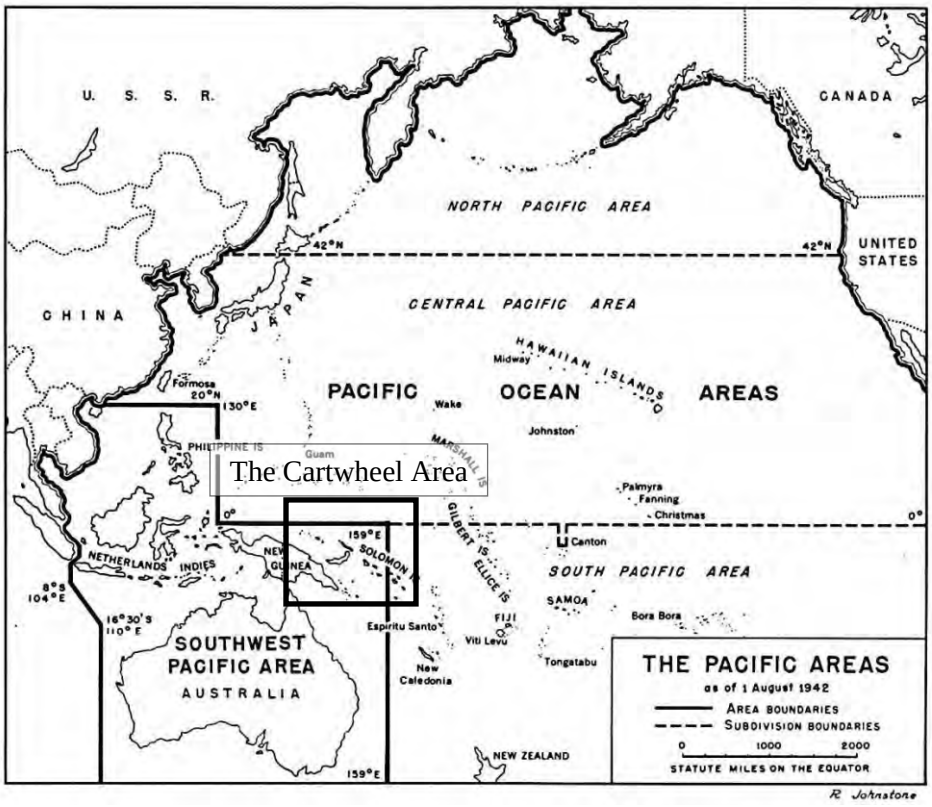

Figure 2. The Pacific Theater Command Boundaries

Source: John Miller, *Cartwheel: The Reduction of Rabaul* (Washington, DC: U.S. Government Printing Office, 1959), 3.

[44]Morton, 397-399; James, 315-316; E. B. Potter, *Bull Halsey* (Annapolis, MD: Naval Institute Press, 1985).209-216. Potter notes that Halsey was initially cool to working for MacArthur, whom he described as a "self advertising Son of a Bitch." This changed dramatically after April 18, 1943 when they met in person and the two men developed a life-long friendship and flawless working relationship.

CASE STUDIES

Buna

Buna Operation Objectives and Plans

The Buna campaign was MacArthur's first offensive operation of the war. After the defeats in the Philippines, Malaya, and in New Guinea earlier in the year, the Allies were finally in position to take the initiative. In mid-1942, MacArthur prepared to seize Buna, however a Japanese landing and subsequent assault down the Kodoka Track ended that operation before it was launched. By October 1942, with the Japanese advance halted, MacArthur revisited an attack toward Buna. Buna, along with nearby Gona, would provide MacArthur's forces an area suitable to use as a logistical base from which to attack west and north along the New Guinea coast.

To seize Buna, General MacArthur sent his New Guinea Force with elements of two divisions, the 7th Australian Division and the American 32nd Infantry Division advancing toward Buna and Gona on two overland axes of advance, as well as another force advancing by sea along the coast from Milne Bay, on the west end of the island. MacArthur and his staff considered the force adequate, they believed that Buna was lightly defended by around 1,500 enemy troops. The Japanese, however had constructed a defense in depth of hundreds of mutually supporting coconut log bunkers, manned by almost 5,500 troops.[45]

Fires in the Jungle

Army jungle warfare doctrine did not envision a significant role for artillery. The 1941 edition of Field Manual 31-20, *Jungle Warfare* bluntly declared that:

> Field Artillery guns are unsuited for use in the jungle. Pack howitzers, though more suitable in design and transport, are limited by their weight, bulk, and ammunition

[45]Milner, 101-102, 139-146; Lida Mayo, *Bloody Buna* (Garden City, NY: Doubleday, 1974), 88-92. The 7th Division had two brigades, the 16th and 25th, the 32nd Division controlled two of its three infantry regiments, the 126th and 128th Infantry. Thus each division had 2/3 of its organized combat power, and the two Australian brigades had been in continuous combat for two months and were well below authorized strength.

> requirements. In addition to the limitations imposed on these weapons by their own bulk and weight and that of their ammunition, the dense jungle greatly confines the burst of their projectiles. Also, the advantages of their long range will ordinarily be lost because of the impossibility of ground observation and the limited effectiveness of air operation.[46]

Lieutenant General George C. Kenney, MacArthur's air commander, held a similar view. Kenney had quickly impressed MacArthur, who had a generally negative view of the Army Air Forces (AAF) up to this point. Kenney's attitude and demeanor meshed well with the theater commander and Kenney gained access to MacArthur that few outside his key staff possessed. Given the personal and professional rapport, Kenney's opinions would carry weight with the theater commander. In clear language, Kenney summed up his view on these matters in a letter to the Chief of the AAF, General Henry H. Arnold:

> [Tanks and artillery] have no place in jungle warfare. The artillery in this theater flies. The light mortar and machine gun, the rifle, tommy-gun, grenade and knife are the weapons carried by men who fly to war, jump in parachutes, are carried in gliders and who land from air transports on ground which air engineers have prepared . . . the whole operation preceded and accompanied by bombers and fighters.[47]

Ground maneuver forces would be light, moving operationally by air, and then maneuvering tactically on foot. Kenney's views would influence how MacArthur would use all fires in SWPA, not just airpower and play a significant role in MacArthur's offensive.[48]

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[46]War Department, *Field Manual 31-20, Jungle Warfare* (Washington, DC: Government Printing Office, 1941), paragraph 28, quoted in Gildart, "Artillery on New Georgia," 83.

[47]Letter Kenney to Arnold, 20 October 1942 quoted in Assistant Chief of Air Staff, Intelligence, Historical Division, *Air Action in the Papuan Campaign*, Army Air Forces Historical Studies, Washington, DC, August 1944, 72, http://www.ibiblio.org/hyperwar/AAF/AAFHS/AAFHS-17/AAF-HS-17.pdf (accessed 20 February 2014).

[48]Walker, 122; Long, 106-107; James, 198-202, 795; Wesley F. Craven and James L. Cate, eds., *The Pacific—Guadalcanal to Saipan*, vol. 4, 7 vols., The Army Air Forces in World War II (Chicago: The University of Chicago Press, 1950), 118-119, 123-124. Kenney quickly became a confidant of MacArthur, according to MacArthur's official diary, Kenney was his third most frequent visitor, meeting with MacArthur 155 times during the war. It is likely that his views carried significantly more weight with MacArthur than the commanders in the field.

Fires at Buna

The 32nd Division had been deployed by air from Australia to New Guinea without the twelve 155mm and thirty-six 105mm howitzers in its four organic artillery battalions. The Division commander, Major General Edwin F. Harding, and his Division Artillery commander, Brigadier General Albert W. Waldron, requested movement of at least a portion of the division's howitzers to join the division. MacArthur and his staff were "cool to the proposal."[49] Instead, MacArthur dispatched artillery already on New Guinea, a section of two 3.7 inch mountain howitzers and a battery of four 25 pounder (87.6 mm) dual purpose gun/howitzers from the 2/5th Field Regiment, Australian Imperial Force (AIF).[50] However, two 25 pounders were lost to enemy air attack, leaving four artillery pieces for the entire division. The 25 pounder was the mainstay artillery piece for British, Australian and other Imperial and Commonwealth forces during the war. However, on New Guinea, the Australians lacked delay fuses for their ammunition. This meant that instead of penetrating Japanese bunkers, rounds from the 25 pounders would burst on impact, limiting the damage to each bunker.[51]

MacArthur's reluctance to move the 32nd Division's organic artillery may have been due to the logistical constraints within SWPA in late 1942. The SLOCs to Buna were interdicted by Japanese air attacks and airlift provided most supplies. The forces at Buna and Gona operated on a logistical shoestring that limited the resources available to support the attack. Given the view

[49]Milner, 135.

[50]In both World Wars, the Australians raised separate forces, the Australian Imperial Forces, for deployment overseas. The Second Australian Imperial Force, raised for WWII, used the prefix "2/" to denote Australian Imperial Force units as opposed to WWI AIF units or militia companies and battalions. Thus the 5th Field Regiment of the 2nd Australian Imperial Forces is named "2/5" in documents. An Australian Imperial Forces field regiment was equivalent to a United States Army field artillery battalion.

[51]James, 231; Milner, 121-124, 132-135; McCarthy, 354-355, 362-364; Mayo, 92-93. Ultimately there would be eight 25 pounders supporting the division.

that artillery was only of limited use, it is not surprising that SWPA General Headquarters (GHQ) was unwilling to send additional artillery at the beginning of the operation.[52]

MacArthur and his staff placed the blame for the 32nd Division's lack of progress on its leadership. In late November, he sent an additional officer, Lieutenant General Robert L. Eichelberger, commander of I Corps, to take overall command of the American effort and ". . . take Buna or don't come back here alive."[53] Eichelberger identified real problems with some leaders and replaced Harding with Waldron. He also was able to get assistance with the logistical problems, but still lamented the inability of Allied tactical aircraft to support his troops. From 22 December to the end of the campaign, I Corps did not request close air support from Kenney's forces, considering it counterproductive.[54]

As noted, a lack of appropriate ammunition hampered the Australian artillery that was present. However, the fuses were only part of the problem. Air attacks were effective, particularly in disrupting Japanese supplies, coordination for close air support was difficult, and accuracy and fratricide were continuing problems. Ultimately, some Australian armor joined the limited Australian artillery and transport aircraft airlifted in a single American 105mm howitzer to support the 32nd Division's advance. That piece proved decisive, as it was the only available

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[52]Milner, 168-170, 198-200, map IV; Kenneth J. Babcock, "MacArthur's Small Ships: Improvising Water Transport in the Southwest Pacific Area," *Army History* 90 (Winter 2014): 27–42; John J. McGrath, *Fire for Effect: Field Artillery and Close Air Support in the US Army* (Fort Leavenworth, KS: Combat Studies Institute Press, 2010), 77-82. http://usacac.leavenworth.army.mil/cac2/cgsc/carl/download/csipubs/mcgrath_fire.pdf (accessed 13 October 2013). SWPA relied on a fleet of converted civilian sailing and motor vessels to supply forward units along the coast. While these ships were capable of moving enough tonnage of supplies to support the divisions, Kenney's air forces could not maintain air superiority over the New Guinea coast until the end of December. Consequently, the Japanese air forces were effective in interdicting the 32nd's sea lines of communication, sinking or damaging several vessels. Airlift tonnage to the available forward airstrip could barely equate in tonnage to what a single coastal lugger could provide in two trips. McGrath argues that the supply situation precluded providing additional howitzers and that supplying them would have placed additional stress on an overburdened logistical system.

[53]Milner, 204.

[54]Ibid., 208-212.

weapon both accurate and powerful enough to destroy the core of the Japanese defense, the bunkers.[55]

Identifying targets through ground observation was very difficult, and artillery accuracy suffered. The problems with the artillery were technical and logistical, and over time, the Australians and Americans began to solve them. Targeting of the enemy improved on 28 November when two Royal Australian Air Force (RAAF) Wirraway aircraft began providing aerial observation for fires. One aircraft was allocated to each division and despite a continuing threat from Japanese fighter aircraft, over time they provided increasingly accurate observation, increasing the effectiveness of artillery fires. Once the 105 howitzer was on hand, Eichelberger's forces had an effective means to destroy enemy positions impeding maneuver. After weeks of costly fighting, Buna and the nearby village of Gona would finally fall to the 32nd and the adjacent 7th Australian Division on January 22, 1943.[56]

Analysis of Fires at Buna

Several issues hampered the effective use of fires to support maneuver. The underestimation of Japanese strength led MacArthur and his subordinate commanders to believe that the allocated maneuver force was sufficient to seize the Buna-Gona area. There was no real attempt to synchronize fires with maneuver at echelons above the division, nor was there a unity of effort between air and artillery fires. Kenney, who as air commander was probably the only individual capable of providing this unity of effort, discounted the contribution that artillery could

[55]Ibid., 375; *Air Action in the Papuan Campaign*, 83; McCarthy, 367; George C. Kenney, *General Kenney Reports: A Personal History of the Pacific War* (New York: Duell, Sloan and Pearce, 1949), 140-141, 170; Griffith, *MacArthur's Airman*, 93. Kenney discusses bringing four howitzers from Australia to New Guinea but there is no explanation why only one made it to Buna.

[56]Craven and Cate, 126; McCarthy, 368-369; *Air Action in the Papuan Campaign*, 88-90; Long, *MacArthur as Military Commander*, 113-116; James, 243-244; Milner, 374-376; Geoffrey Perret, *Old Soldiers Never Die: The Life of Douglas MacArthur* (New York: Random House, 1996), 323-327, 624. Mayo, 182-183. Parret in discussing Buna, argues that Milner was unduly influenced by General Harding, who was director of the historical division after the war. However Harding retired in 1946 and the book was not published until 1956, a gap of 10 years.

provide. Support of the ground troops was only one portion of the effort his air forces were making against the Japanese, and his fires were never completely synchronized with those of the maneuver force. Harding, Waldron, and Eichelberger made on-ground assessments of fires effectiveness, and reevaluations of their force fires requirements. Their lack of access to SWPA and MacArthur indicates that these assessments either never made it to SWPA GHQ or were discounted. The official Army historian studying this campaign, noted that "Had there been more 105's at the front with enough shells and delay fuses (or, as General Waldron suggests, a few 155's similarly provided), there might have been no need to bring in tanks; countless lives might have been saved, and the campaign might have been appreciably shortened."[57]

While the limited artillery partly filled the gap and improved its performance over time, they lacked the ability to mass enough fire to have effects beyond a local tactical action. Eichelberger's unwillingness to request CAS for the entire final month of the campaign shows that he did not believe that Kenney's air force could provide this capability either. This forced maneuver forces to generate the effects they needed from fires on their own, at an increased cost in lives and time. This in turn prolonged the time required to defeat the Japanese in Buna and Gona, and lengthened the time the 7th and 32nd Divisions would need to refit and reorganize for future operations. The delays in seizing Buna delayed Allied exploitation of the area as an advanced base for further operations, reduced forces available for near term employment, and allowed other Japanese forces in New Guinea additional time to build defenses.[58]

[57]Milner, 375.

[58]Ibid., 375-376; Mayo, 93, 182-183; McCarthy, 366-369. For a contrary view of artillery usefulness at Buna, see McGrath, 81-82.

The Battle of the Bismarck Sea

MacArthur's Objectives

While Operation Cartwheel preparation itself would not actually begin until the publication of the final Joint Chiefs of Staff memo ordering the operation in March, MacArthur and Kenney were not idle in setting conditions for a successful offensive. MacArthur was committed to Task Two, the seizure of Lae. Even prior to the end of the Buna operation, MacArthur began preliminary planning for this next operation. However, the Japanese, despite the setbacks on the Kodoka Track, Milne Bay, and Buna still had sufficient combat power to interfere with MacArthur's offensive plans. In early January, the Eighth Area Army, which commanded Imperial Japanese Army (IJA) forces in the region, began reinforcement of the 18th Army forces on New Guinea.[59] Lieutenant General Hatazo Adachi, the 18th Army commander, intended to defend south along the coast near Salamaua. Allied intelligence, through signals intelligence and robust aerial reconnaissance, had allowed aircraft and submarines to attack Japanese ship and barge traffic moving between positions. While these struck at reinforcing convoys, the Japanese were still able to get troops and supplies through to New Guinea. MacArthur lacked the capability to strike at Lae and he would have to weaken the Japanese forces and build his own combat power for him to have a chance of success.[60]

Kenney's Preparation and Plans

MacArthur had limited options, while he wanted to strike at the Japanese, he understood that it would be several months before he could build up enough combat power and shipping for operations against Lae. He would have to rely on the only force under his command capable of

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[59]An Imperial Japanese Army area army was the equivalent of a American theater army, a Japanese army was the equivalent of American corps.

[60]Douglas MacArthur, *Reports of General MacArthur: Japanese Operations in the Southwest Pacific Area, Vol. II, Part I* (Washington, DC: Government Printing Office, 1966), 188-190; Morton, 367-368; Miller, *Cartwheel*, 9-10, 34-36.

reaching Japanese positions in force, Kenney's air forces. Kenney had, in the interwar years, given much thought to attacking enemy forces before they reached forward positions. In the Southwest Pacific, MacArthur and Kenney identified the clear Japanese reliance on sea lines of communication from Rabaul. Both he and MacArthur thought that successfully interdicting Japanese logistics would assist in the pending Cartwheel offensive by restricting the Japanese ability to maneuver forces to respond to Allied operations. In Kenney's opinion, the key was to strike effectively at Japanese shipping. Since his arrival in theater, Kenney had dealt with the AAF's lack of success in striking Japanese shipping. B-17 and B-24 bombers, designed to bomb from high altitude, struck at shipping much as they would strike a fixed facility. However, the ships could maneuver out of danger before the ordnance impacted. The answer was to mass fires by concentrating large numbers of B-17s per ship. However, unlike Britain with its plentiful locations for airfields, in the South and Southwest Pacific, the airfields were limited, both in size and aircraft capacity. Massing bombers took time, and reduced the range from which they could strike effectively. [61]

The Navy was effectively employing SBD Dauntless dive-bombers in the Solomons as ship killers.[62] This aircraft was in the AAF inventory as the A-24 Banshee, however Kenney determined that the A-24 was not suitable for New Guinea operations, despite the Navy's daily success. Kenney instead launched a program to modify his existing B-25 Mitchell medium bomber force. Kenney's maintenance crews rearmed the Mitchells with additional forward firing .50 caliber machine guns (and ultimately a 75mm howitzer later in the war) to strike at Japanese airfields and shipping. The technique called for high-speed, low level approaches to targets. This

[61]Griffith, 25-26, 81, 103-104; Craven and Cate, 63-70, 106-107, 142; Edward J. Drea, *MacArthur's ULTRA: Codebreaking and the War against Japan, 1942-1945* (Lawrence, KS: University Press of Kansas, 1992), 68-72.

[62]Under the Navy's WWII aircraft designation system, SB denotes a scout/bomber and the D denotes it as a product of the Douglas Aircraft Company.

increased accuracy, thus effectiveness against shipping, and due to the Japanese weakness in anti-aircraft weapons, did not increase risk to his crews.[63]

To identify targets for this force, intelligence analysts combined signal interceptions with reports from coastwatchers, military officers or civilians who stayed behind to provide intelligence at scattered locations in the Japanese rear. These, together with other sources, enabled Allied intelligence to establish patterns of movement and learn how to identify major troop movements. After many fits, starts, and false reports, by early January 1943 the signals and intelligence teams were able to identify and verify a significant portion of troop movement by Japanese forces in theater. While not perfect, SWPA was able to identify and strike Japanese formations on the move.[64]

Interdicting the Japanese

By January 1943, Kenney was attempting to put his air force to work striking Japanese shipping. Intelligence reports and aerial reconnaissance on 6 January identified a troop convoy moving west off the south coast of New Britain. For two days, Kenney's crews struck at the convoy, sinking two transports, however the remainder of the convoy delivered their troops and cargo. A follow on attack by two submarines as the convoy returned cost the Japanese two ships, and the loss of one of the submarines. The operation cost the Japanese at least 600 men and 23 aircraft, but they retained the ability to move troops and supplies.[65]

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[63]Craven and Cate, 24-25; Kenney, 107, 161-162, 169; Griffith, 98-101. Kenney's main concerns hinged on the Banshee's limited range and armament compared to other aircraft. The Dauntless/Banshee was designed as a dive bomber, and successful in that role. Kenney preferred low level attacks where the Banshee was less useful.

[64]Drea, 53-56.

[65]Ibid., 62-66; Craven and Cate, 135-137; Samuel Eliot Morison, *Breaking the Bismarcks Barrier, 22 July 1942-1 May 1944*, vol. 6, 15 vols., History of United States Naval Operations in World War II (New York: Little, Brown and Company, 1950), 54-58; First Demobilization Bureau, *Japanese Monograph No. 127, Southeast Area Operations Record, Part IV, Revised Edition: Eighth Area Army Operations* (General Headquarters, Far East Command (US), July 1949), 37.

The submarine attack on the convoy was not coordinated with the air attacks. Navy Task Force 72, which commanded the submarines operating in the SWPA, informed patrolling submarines of the presence of the convoy separately. The submarine patrol areas were somewhat coordinated, so that Allied aircraft knew to make positive identification prior to attacking. The physical separation implies that instead of coordinating to maximize the impact of attacks on the enemy, the coordination was to prevent fratricide through geographic separation of forces.[66]

In late January 1943, signal intercepts provided indications that elements from the Japanese 51st Infantry Division would move by ship from Rabaul to Lae, New Guinea. For MacArthur, this was an excellent opportunity to reduce the combat power that his force would face upon the launch of Cartwheel. He could both decisively interdict Japanese movement and hamper their defenses on New Guinea. For Kenney, this was a chance to prove the validity of his attack theories from his days in Air Corps Tactical School. He and his staff rapidly planned a deliberate strike on the convoy and intended it to be so decisive that it would cripple the Japanese ability to move their forces within the theater. Helped by intelligence that the convoy was sailing from Rabaul to Lae, Kenney chose to engage the convoy in the restricted waters of the Dampier Strait, on the west end of New Britain. This engagement area placed the placed the Japanese ships at a disadvantage capitalizing on the terrain and predicted weather patterns.[67]

Starting on 1 March 1943, B-17s and B-24s tracked the Japanese convoy of eight transport ships along with eight escorting destroyers. They did not sink any ships, but maintained contact with the convoy. On 3 March, once the convoy was in range, a force of over one hundred American and Australian fighters and bombers including the modified B-25s from the Fifth Air Force struck the convoy. Attacking through most of the day, Kenney's airmen would sink seven transports and severely damage the eighth. These ships carried 6,000 soldiers, 12 antiaircraft

[66]Morison, 66-69.

[67]Drea, 67-70; Griffith, *MacArthur's Airman*, 103-106; Morison, 54-57.

guns, 21 artillery pieces, as well as fuel and munitions. All of the equipment and over 3,000 Japanese soldiers and sailors, including 1,257 men from the 2,000-man strong 115th Infantry Regiment, were lost. The attacking planes sunk two of the escorting destroyers and severely damaged two others. Kenney's flyers shot down over twenty Japanese aircraft against Allied losses of four aircraft. That night, U.S. Navy Patrol Torpedo (PT) boats struck the remnants of the convoy, and sunk one of the crippled ships, the following morning aircraft returned to sink the remaining two destroyers, bringing total losses to four destroyers and eight transports. Initial reports from the aircrews claimed twenty-two ships sunk and over 15,000 Japanese killed. MacArthur and Kenney were jubilant, given the one sided nature of the engagement. They issued a press release with these figures and calling it "the battle of the Bismarck Sea," a name which stuck, despite the actual location in Dampier Strait.[68]

In one decisive engagement, Kenney achieved MacArthur's intermediate goal of weakening the Japanese. The immediate loss of the equipment and 62% of an infantry regiment was significant, but the Japanese could no longer operationally maneuver south of New Britain by sea. The risk was too great and Japan could not sustain these losses for long. Large convoys could no longer venture past Rabaul to New Guinea or south along the Solomon Islands with reinforcements, fuel, food, and other supplies for army formations. Movement along the coast would be by foot, truck, or along coastal waters by barge. Operational movement and logistics were restricted to aircraft and submarines, and occasionally a small convoy, but these methods were ineffective ways to move the masses of men or amounts of materiel the Japanese required.

[68]Morison, 54-65; Craven and Cate, 141-146; Griffith, 104-108; Drea, 68-72. Even after the war and verification of the toll from Japanese sources, Kenney persisted in his assertion. While the number may have been disputed, the impact on the Japanese ability to maneuver was not. The Bismarck Sea operation was decisive in breaking the Japanese ability to regain the initiative.

MacArthur had effectively fixed both armies of the Eighth Area Army in position while the Allies were comparatively free to maneuver and strike locations where they saw fit. [69]

Analysis of the Bismarck Sea

MacArthur synchronized his joint fires with his maneuver force in two key ways. First, he set conditions for his future maneuver operations by weakening enemy maneuver forces for the long term in the Lae area, his next objective. By cutting the Japanese SLOCs between Rabaul and Lae to all but small vessels, he assured that 18th Army troops facing his offensive would be weaker. Second, MacArthur, through his naval commander, synchronized the day air attacks with night attacks by PT boats. This separated each force in time and space to avoid fratricide but also allowed each force to operate during the periods they were most effective. While the PT boat squadron could itself can be considered a maneuver force, the boats could also place torpedo fire on the crippled ships. The coordination of these attacks also provided unity of effort against SWPA's decisive target for the duration of the engagement. Together, the combined attacks then ensured that the damaged ships were a complete loss to the enemy.

Tactically, the assessment of the Bismarck Sea was flawed. As noted above, MacArthur and Kenney's accepted the aircrews exaggerated post attack claims at face value, and did not verify them through intelligence sources. This doubled the claimed loss to the enemy force. However, this flawed assessment was irrelevant to the outcome of the campaign. The importance of the Bismarck Sea engagement did not lie in the amount of resources lost to the enemy, it lay in impact on the Japanese ability to maneuver and sustain their forces. MacArthur clearly and accurately assessed operational impact of the Bismarck Sea to the Japanese. They had suffered a decisive defeat and Japanese ships could no longer operate freely at sea south of New Britain. Japanese forces at Lae and to its southeast now relied on small ships, barges, and less efficient

[69]First Demobilization Bureau, 40; Morison, 62-63; Craven and Cate, 145-147. Edwin Palmer Hoyt, *Yamamoto: The Man Who Planned Pearl Harbor* (New York: McGraw-Hill, 1990), 240.

land routes for supplies. The Japanese could no longer generate enough combat power to take the offensive and the initiative now shifted completely to MacArthur.

Operation Toenails and New Georgia

Toenail Objectives and Plans

As Operation Cartwheel opened, Halsey, in line with MacArthur's guidance, would advance northwest toward Rabaul. His first target was the Japanese airfield at Munda, on the southwest corner of the island of New Georgia. Munda provided a springboard for Japanese aerial interdiction of Allied lines of communication in the Solomons. At Munda, the Japanese had the southernmost of "a nicely spaced series of airstrips" descending from Rabaul, through the Solomons, that extended the operational reach of Japanese airpower.[70] Refueling fighters at Munda gave the Japanese aircraft the ability to strike Guadalcanal in force, but conversely allowed them to shelter in the comparative safety of Rabaul, out of range of most of Halsey's or Kenney's aircraft. Allied aircraft frequently attacked Munda but were only able to restrict, not deny the Japanese the use of the airfield.[71]

The attack, named Operation Toenails, would be complicated, and plans changed when Halsey received information from a local coastwatcher that the Japanese were building a second airfield at Segi Point, on the north coast of that island.[72] A navy task force would conduct five nearly simultaneous landings of the New Georgia Occupation Force (NGOF), a joint task force of Army and Marine forces under the 43rd Infantry Division headquarters on New Georgia. The

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[70]Morison, 90.

[71]Ibid., 124; Craven and Cate, 83-84; Henry I. Shaw Jr., and Douglas T. Kane, *Isolation of Rabaul*, vol. 2, History of U.S. Marine Corps Operations in World War II (Washington, DC: US Government Printing Office, 1963), 42-43; Second Demobilization Bureau, *Japanese Monograph No. 122 (Navy): Outline of Southeast Area Naval Air Operations, Part III* (General Headquarters, Far East Command (US), April 1949), 25-28.

[72]Coastwatchers were military or civilian observers who reported on Japanese aircraft, ship, and troop movements. Most had lived or worked in the area for years and they had extensive knowledge of the terrain and population.

NGOF would capture Munda airfield and seize Segi Point to support operations toward Rabaul. The Segi Point airfield was incomplete, and was relatively near landing beaches, enabling a rapid assault. However, a direct assault on Munda was not feasible due to geography and the disposition of enemy forces. The invasion force would seize the lightly defended outer islands, and then land east of the airfield on the only suitable beaches. The bulk of the 43rd Division would land on New Georgia, then attack west through forbidding jungle terrain toward the Munda airfield. Some elements of the 43rd Division and a portion of 1st Marine Raider Regiment would seize secondary objectives and block enemy forces elsewhere on the island from reinforcing the main Japanese defense.[73]

To neutralize the airfield, the planners took advantage of the adjacent island of Rendova. The Japanese only had a small force on this island and it was close enough to Munda for long-range artillery to reach the airfield. Once an assault force seized the island, an Army artillery battalion and Marine Corps defense battalion would land and emplace 155mm guns and howitzers on Rendova to harass and neutralize both the airfield and enemy forces on the New Georgia coast. This achieved the desired effect on the airfield while maneuver forces fought their way to the objective.[74]

Conducting the Assault

Toenails commenced on 22 July 1943, six days ahead of schedule with landings near Segi Point. The local coastwatcher was under attack and a Marine Raider Battalion landed early to both assist him and seize the incomplete airfield. After this impromptu start, the main assault began on 30 July when the 43rd Division went ashore. The division proved unable control the

[73]Miller, *Cartwheel*, 73-81; Shaw and Kane, 44-46. The New Georgia Occupation Force was joint in the sense that it was composed of units from more than one service. However it should not be considered a JTF in the modern sense, the NGOF only controlled ground operations.

[74]Miller, *Cartwheel*, 73; Shaw and Kane, 52-56

entire operation and conduct the main attack toward the airfield. On 16 July, XIV Corps took over command of NGOF. The corps landed the 37th Infantry Division with two of its three Regimental Combat Teams (RCT), as well as an RCT from the 25th Infantry Division to reinforce the Munda front. The reinforced troops advanced against fierce Japanese resistance to seize Munda after a campaign that lasted six long and difficult weeks. The Allies were able to reinforce their troops, but the Japanese, due to the reduction in their operational mobility, could not bring in additional forces. As one Japanese report stated, ". . . there arose a great disparity in the fighting power, especially in air and naval strength and sea transport capacity, so the area army could not achieve our objective, to our regret."[75] Despite the opposition, by August 5 XIV Corps secured the airfield and Halsey's forces immediately began preparing it for Allied use. NGOF continued its operations on New Georgia until August 25 when the island was secured.[76]

Fires on New Georgia

After the initial landing on Rendova, it took time to get the artillery into position. Mud slowed the effort, and on 2 July, before anti-aircraft guns could get into operation, a Japanese air raid damaged several guns and cost the 9th Marine Defense Battalion several casualties. The Japanese, while they had plenty of their own artillery, lacked the range to conduct counterbattery on the 155mm guns and howitzers on Rendova. Once combat air patrols and antiaircraft guns were present, the Japanese could not silence the American long-range weapons. This let the American guns on Rendova conduct operations with impunity through the remainder of the campaign. While the XIV Corps slowly maneuvered to seize the airfield, Army and Marine artillery pieces on Rendova and Allied aircraft were able place effective fires on the airfield. On New Georgia itself, XIV Corps lacked organic corps artillery, so they improvised one,

[75]First Demobilization Bureau, *Eighth Area Army Operations*, 79.

[76]Miller, *Cartwheel*, 81-82, 161-164; Shaw and Kane, 116-118; First Demobilization Bureau, 79.

consolidating all the artillery under a single commander, and allocating a 155mm and two 105mm howitzer battalions to support each division's advance. The Japanese countered with airstrikes and artillery fire, but an almost continuous fighter cover kept the Japanese from effectively suppressing American fires. The primary obstacles to artillery units were logistical and technical, as the damp conditions and problems with powder lot variations complicated efforts to place continuous and effective fire on the airfield and defending enemy maneuver forces. Terrain was another significant obstacle, as poor maps and the nature of the jungle made it exceedingly difficult for both ground and aerial observers to accurately identify targets.[77]

The Forward Echelon, 2nd Marine Aircraft Wing (2nd MAW) would provide command and control of air operations over New Georgia as the New Georgia Air Force. Headquartered on Rendova, 2nd MAW controlled all allied aircraft operating over and around New Georgia, and focused on providing air defense for the naval task force, close air support, and interdiction of Japanese SLOCs to New Georgia. Much like Kenney's Fifth Air Force at Buna, close air support was difficult. NGOF did not request a single CAS mission until 12 July. Ground troops preferred artillery as it was more likely to achieve a direct hit on a bunker. A 2nd MAW report noted that close air support in the jungle was "impractical" when target identification was difficult, particularly when observers could not accurately identify their own location in the thick terrain.[78] 2nd MAW oversaw thirty-seven air support missions over the course of the campaign, providing counterbattery fire on at least one occasion. These fires were most effective when ground troops

[77]Miller, *Cartwheel*, 73-78, 141-142; Christopher S. Donner, *Pacific Time on Target: Memoirs of a Marine Artillery Officer, 1943-1945*, ed. Jack H. McCall (Kent, OH: Kent State University Press, 2012), 24, 31-35; Gildart, 88-89; Walker, 121-126.

[78]Robert Sherrod, *History of Marine Corps Aviation in World War II* (San Rafael, CA: Presidio Press, 1980), 151.

could mark a target clearly for the flyers, allowing them to mass the air strike accurately on the target without endangering ground troops.[79]

After the Munda airfield was secured, the long-range artillery on Rendova moved to New Georgia and began placing intense fires on the island of Kolombangara. The Japanese believed this island to be the next Allied objective, and infiltrated additional forces to meet the Allied attack. However, Halsey struck at Vella Lavella and Arundel on 27 August, encircling the forces remaining on New Georgia and Kolombangara. The deception forced the Imperial Japanese Navy to commit combat power and evacuate 10,000 troops and forced several engagements with Allied naval units that cost the Japanese additional casualties.[80]

Analysis of Fires on New Georgia

From the planning process forward, the New Georgia campaign synchronized fires with maneuver operations. Long-range artillery suppressed the Munda airfield until maneuver forces could seize it, partially achieving on operational objective within the first week of the operation. At Munda, then later at Kolombangara, these long-range guns benefited from the available Japanese artillery's inability to range their positions. The Japanese were forced to commit aircraft to the counter-fire fight, and after a single effective attack, could no longer suppress the artillery on Rendova. Insulated from effective counter-fire, the combined operations of Army and Marine Corps fires and XIV Corps maneuver forces eliminated the threat Munda posed to Allied lines of communication prior to its capture. Neutralization of the Munda airfield and the eventual seizure of both that airfield and the incomplete one at Segi Point extended the ability of Allied fighters to escort medium and heavy bombers to Rabaul. Both 43rd Division and XIV Corps provided

[79]Ibid., 146-152.

[80]Miller, *Cartwheel*, 172-173; Shaw and Kane, 158-162; William F. Halsey and J. Bryan III, *Admiral Halsey's Story* (New York: McGraw-Hill Book Company, 1947), 172; Craven and Cate, 235-237; Donner, 39-42.

effective direct and general support of the maneuver force with artillery. The difficulties they encountered were predominately technical, as artillery units had to adjust their procedures to account for technical problems they encountered in their first combat.

While artillery was clearly synchronized, commanders attempting to synchronize air support with ground troops faced the same difficulties as at Buna. The terrain made it difficult to identify target locations and sometimes observer locations correctly. Since this increased the risk of fratricide, ground commanders, like on Buna, did not extensively request CAS. Unlike Buna, NGOF had several battalions of artillery and while artillery suffered several difficulties of their own, they were more effective for the maneuver force than CAS. Unable to effectively coordinate CAS, except in the rare instances where the terrain permitted it, Halsey's forces achieved unity of effort through a division of labor. Air support focused on operating past artillery range to undermine lines of communication and defeat enemy airpower. Artillery focused on shaping the tactical engagement and enabling maneuver. This eliminated duplication of effort, and while not the best solution, succeeded for this campaign. It would take practice and experience to build the skills needed to employ CAS effectively in the jungle.

Assessment of long-range artillery was almost immediate. Artillery fire and air attacks kept the Japanese from effectively using the Munda airfield. Later in the campaign, fires onto Kolumbangara clearly forced the Japanese to reposition forces toward the perceived threat, allowing Halsey's next operation to strike where they did not expect. On New Georgia itself, assessment of fires proved difficult in the thick jungle terrain. Ground troops receiving supporting fires from artillery were not able to measure the effectiveness of fires until they physically reached the area. They determined effectiveness by the intensity of enemy resistance, a task made more difficult by Japanese artillery, who imitated American firing patterns to frustrate counter-fire. Ultimately, though, artillery and air fires achieved the purposes the maneuver commanders

required from it. The Japanese were unable to reinforce New Georgia from elsewhere in the Solomons and Halsey had the airfields he needed for his future operations.

Isolating Rabaul

Planning the Isolation

When Cartwheel was planned, MacArthur felt that Allied forces would have to conduct a direct assault upon Rabaul. However, the British members of the Combined Chief of Staffs were concerned about the troop requirements of a land assault upon Rabaul. As early as May of 1943 the question arose whether neutralizing Rabaul might be a better approach compared to capturing the fortress. By early August, American planners in Washington were having the same concerns. There did not seem to be any additional advantage to a direct assault of Rabaul and its almost 100,000-man garrison over neutralizing its ability to project power. At the Quebec Conference in late August, as Halsey was finishing his operations on New Georgia, the Combined Chiefs recommended neutralizing the fortress and the President and British Prime Minister approved this action. The Joint Chiefs then instructed MacArthur to isolate the Japanese fortress and continue his planned follow-on operations along and adjacent to the New Guinea coast. Then he could plan to turn north to Mindanao in the Philippines. This changed the approach that MacArthur's forces, to include Halsey's, would take. Now, instead of invading New Britain and conducting a direct assault, operations against Rabaul would focus on seizing existing airfields or terrain suitable for airfields. MacArthur and Halsey could then position aircraft to conduct a sustained bombardment of Rabaul and render it unusable for air and naval forces.[81]

Isolating Rabaul was now an intermediate objective. MacArthur's main effort concentrated along the New Guinea coast. First, he would as previously planned, seize Lae and the Huon Peninsula on New Guinea, which offered good terrain for airfields. Once this area was

[81]Morton, 458, 517-520; James, 330-334; Morison, 432-433; Miller, *Cartwheel*, 222-225.

secure, he would pass his force through the Dampier and Vitiaz Straits. This action bypasses Rabaul to the west and cuts it off from Japanese forces in western New Guinea. To protect his flank, instead of invading all of New Britain, he would land a force to seize and hold the airfield at Cape Gloucester on New Britain. Once these operations were complete, MacArthur could strike north to seize an anchorage in the Admiralty Islands to replace Rabaul as a staging base, then commence his next campaign along the New Guinea coast.[82]

Halsey would continue his original plan to seize a lodgment on Bougainville, construct airfields and then commence his own air campaign, in conjunction with Kenney's, to destroy Rabaul's utility as an air and naval base. Once the airfields were in operation, Halsey would bypass Rabaul to the east, and seize Kavieng on New Ireland to cut Rabaul off from Truk. Without ships or aircraft to project forces or fires, Rabaul would be unable to affect Allied operations. Once Rabaul was isolated, it would be left behind with a containing force as MacArthur and Halsey moved forward, however if the situation changed and MacArthur found it necessary to seize Rabaul, his force would already have secured sea control and air superiority.[83]

SWPA planners quickly identified that the initial objective should be the airfield at Nadzab and the port of Lae. Nadzab was a pre-war airfield that was both near the port at Lae and offered suitable land close by for significant expansion. From Nadzab, Kenney's air forces could gain air superiority over the Huon, western New Britain, and the southern Bismarck Sea. Lae provided a port for logistics base, and a position from which to move overland to control the west side of the straits. Once MacArthur possessed this land, he could strike east toward Rabaul, west toward both Mandang and Wewak on the coast, or north to the Admiralty Islands.[84]

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[82]Long, 132-134; Morison, 369-372.

[83]Miller, *Cartwheel*.

[84]Joint Chiefs of Staff, "Memorandum from Joint Chiefs of Staff to MacArthur, Nimitz, Halsey, 29 March 1943" (Naval War College, 2013), 1273, Command Summary of Fleet Admiral Chester W.

The plan MacArthur approved brought to fruition the concept Kenney outlined to General Arnold the previous year. Seizing Nadzab, Lae and the rest of the peninsula would require two Australian divisions and the American 503rd Parachute Infantry Regiment (PIR). The 503rd would parachute directly onto Nadzab while the 9th Australian Division assaulted beaches near Lae. Once they secured the airfield, Kenney would airlift the 7th Australian Division into Nadzab, and the Australian forces would converge on Lae. The 503rd PIR and Australian long-range patrols would guard against any counterattack from the west. The key to the plan however, was to draw Japanese attention and combat power away from the Lae-Nadzab area and toward Salumaua. From MacArthur's perspective, Nassau Bay to the southwest offered a sheltered location to stage landing craft, but Salumaua itself was unimportant. However, an attack there offered an opportunity to draw enemy forces away from Lae and Nadzab. The 3rd Australian Division, supported by two American task forces from the 41st Infantry Division, and Australian small units operating in the interior, would occupy Nassau Bay and attack toward Salumaua.[85] This operation would force the Japanese to focus on the immediate threat and reduce the resistance the Allies would face in the main assaults at Nadzab and Lae.[86]

Conducting a Two Pronged Campaign

On 30 June, the same day Halsey went ashore near Munda, MacArthur's forces conducted unopposed amphibious landings on Kiriwina and Woodlark islands at the south end of

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Nimitz, USN Nimitz "Graybook" 7 December 1941 – 31 August 1945, http://aws3.digark.us/NWC/DS/001/PDF/NWC_DS_001_01_v3_WEB.pdf (accessed 24 Febuary 2014); Miller, *Cartwheel*, 189-192.

[85]Throughout the New Guinea campaign, Australian small units operated in the interior of New Guinea; conducting reconnaissance, harassing the Japanese, and building grass emergency airstrips for Allied flyers.

[86]Miller, *Cartwheel*, 189-192; David Dexter, *The New Guinea Offensives*, vol. 6, Australia in the War of 1939-1945, Series One (Army) (Canberra: Australian War Memorial, 1968), 56-57. James P. Lowe, "Nadzab (1943): The First Successful Airborne Operation" (Master's thesis, Louisiana State University, Baton Rouge, LA, 2004), http://etd.lsu.edu/docs/available/etd-11022004-201139/ (accessed 30 March 2014), 44.

the Solomon Sea.[87] The same day, elements of the 41st Division secured Nassau Bay, near Salamaua, against light opposition. The American force brought ashore additional artillery and secured the bay for expansion into a logistical node to support the Lae and Salamaua operations. The 3rd Australian Division, with two American task forces under its operational control, attacked in force toward Salamaua. The Japanese commanders believed, based on the size and composition of the force attacking toward Salamaua, that this was MacArthur's main effort. They believed that holding there would be the key to defending Lae and the Huon Peninsula. The combined Australian and American force continued this operation for two months to draw Japanese attention toward Salamaua. Concurrently, Australian troops secured temporary inland airstrips to allow Kenney's air force to strike at Wewak through August. In the course of these attacks, Kenney's air force destroyed over 100 Japanese planes and gained air superiority over the Huon Peninsula.[88]

On 4 September 1943, MacArthur commenced his attack on Lae and Nadzab. Kenney's aircraft struck the airfield and the beaches near Lae to suppress any enemy force in the area. The 503rd PIR then dropped onto the airfield without opposition. Kenney's air forces then airlifted in the 7th Australian Division. Concurrently the 9th Australian Division conducted an amphibious landing near Lae. By 11 September, the Japanese, threatened with encirclement, began evacuating the Salamaua area, and on 12 September, facing destruction, the 18th Army ordered all forces to withdraw. Japanese units avoided encirclement and were north of Lae by 18 September. MacArthur's Australian troops were now able to attack along the coast toward Finschaven and

[87]Miller, *Cartwheel*, 49-50, 55-59; Morison, 130-134. The intent behind the Kiriwina and Woodlark operations was to build airbases to bombard Rabaul and support Halsey, however these islands lacked even basic infrastructure. By the time engineers built support infrastructure, other fields closer to Rabaul were in operation. The attacks provided a useful exercise in amphibious operations, and a distraction for the Japanese, but otherwise contributed little to the broader campaign.

[88]Miller, *Cartwheel*, 62, 64-66, 200-203; Dexter, 92-103; Griffith, 124-129; Kenney, 251-253, 282-284; Craven and Cate, 174-180; First Demobilization Bureau, 83-84. The 3rd Australian Division was relieved by the 5th Australian Division on 24 August.

secure one side of the straits. With possession of Nadzab, Kenney could now strike as far east as Bougainville and west past Wewak. He had positioned his air force to fight for air superiority over Rabaul and could now begin his role in reducing the Japanese stronghold from the air.[89]

Once MacArthur had his amphibious force ashore, Halsey began his portion of the campaign. He landed a New Zealand brigade group on the Treasury Islands and raided Choiseul Island. On 1 November, the 3rd Marine Division went ashore at Empress Augusta Bay on Bougainville Island. Japanese opposition was fierce, but they simply did not have the maneuver forces in position to prevent or seriously hinder the landing. Japanese aircraft struck at the perimeter, but their airstrikes were too small and allied air defenses were sufficient to prevent significant interference with the operation. The Japanese immediately saw the implications of the Marine presence. To counter the threat, they embarked additional troops in five Imperial Japanese Navy (IJN) destroyers, and dispatched them in a naval task force. In a running night surface engagement, an American force repulsed this attack and secured sea control in waters around Bougainville. The Marines expanded the perimeter and defended against local counterattacks while engineers set to work building airfields from which to bombard Rabaul. Halsey reinforced the Marines with the 37th Infantry Division, then relieved the Marines with the XIV Corps headquarters and the Americal Division.[90] The corps expanded the perimeter then dug in and

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[89]Miller, *Cartwheel*, 194-195, 202-214; Lowe, 45; First Demobilization Bureau, 82. MacArthur, *Reports of General MacArthur*, 209-212.The 503rd lacked organic artillery, so after a brief training progam and a single practice jump, the Australian 25 pounder battery joined the 503rd for the operation.

[90]Miller, *Guadalcanal: The First Offensive*, 215; Shelby L. Stanton, *World War II Order of Battle (Ground Force Units)* (Mechanicsburg, PA: Stackpole Books, 2006), 10, 13, 184-187; Shelby L. Stanton, *Vietnam: Order of Battle* (Washngton, DC: U.S. News Books, 1981), 79-80. The Americal (American-New Caledonia) Division was one of three named U.S. Army divisions during WWII. It was formed in New Caledonia by Major General Alexander M. Patch, who specifically requested the Americal name, from his Task Force (TF) 6184 and other units. TF 6184 deployed to defend New Caledonia and was composed of non-divisional units left over from the transition from square to triangular divsions. In 1954, the Army redesignated Americal Division as the 23rd Infantry Division (Americal), but the Americal name was commonly used instead of its official number. The other two named divisions were the Hawaiian and Philippine Divisions. During triangularization in 1941, the War Department split the units of the Hawaiian Division into the 24th and 25th Infantry Divisions. The Philippine Division was destroyed on Bataan in

prepared a defense in depth. On 8 March 1944, the Japanese mounted a large-scale counterattack but despite fierce fighting, did not have enough combat power to break XIV Corps' ring of infantry and artillery. With the airfield secure, Halsey's air force, Air Command, Solomons (Airsols), a combined force from all three American services and the Royal New Zealand Air Force (RNZAF), could now range Rabaul with all of its aircraft.[91]

MacArthur, now that he had multiple airfields from which to bombard Rabaul, turned toward setting conditions for his follow on operations. MacArthur's forces landed on the western end of New Britain at Cape Gloucester in January of 1944 to seize an airfield. Halsey occupied the Green Islands north of Bougainville in February and established an airfield, avoiding an assault on Kavieng, which, like Rabaul and Buka, was bypassed and isolated. MacArthur followed with the seizure of Los Negros and the harbor at Manus the same month. Halsey occupied Emirau a few weeks later in March, thus completing the physical encirclement of Rabaul.

MacArthur had achieved the modified objectives for Cartwheel and cut off Rabaul, northern Bougainville, and a significant Japanese base at Kavieng on New Ireland from all support. This campaign isolated almost 100,000 Japanese troops. Although they were relatively self-sufficient, with plenty of ammunition, and protected by an impressive system of underground bunkers, they lacked the physical ability to take the fight to the Allies now surrounding them and were effectively out of the war.[92]

1942, in 1945 it was re-raised briefly as the 12th Infantry Division (Philippine Scouts) before deactivating after the war.

[91]Shaw and Kane, 174-180; First Demobilization Bureau, 102-103, 105-107; Morison, 308-320; Miller, *Cartwheel*, 358-378.

[92]Shaw and Kane, 507-523; Miller, *Cartwheel*, 306-308, 312-315, 349-350; Potter, 264-265, 267.

Supporting the Isolation with Fires

Joint fires were an important part of MacArthur's plan. Artillery units provided fire support to maneuver units on New Guinea and Bougainville as they carried out their portions of the overall operation. 41st Division troops landing to reinforce the 3rd Australian Division brought their 105mm howitzers to augment the Australian 25 pounders. The Australian division commander designated an American officer as the Commander, Royal Artillery (CRA) for the force, unifying command of all artillery from both nations. MacArthur's plan counted on deceiving the Japanese as to his true objective. The 3rd Division used this firepower to support their maneuver force efforts to fix Japanese forces at Salamaua, successfully drawing them away from MacArthur's actual objective at Lae.[93]

On Bougainville, as the Marines and later XIV Corps built the perimeter, artillery became an important component of the defense. It provided counterfire on Japanese artillery attempting to disrupt the construction of airfields, allowing their completion. XIV Corps lacked a Corps Artillery headquarters, so they designated the 37th Division's DIVARTY to assume that role. When the Japanese assembled their counterattack in March, this headquarters coordinated fire support for maneuver forces. The Japanese faced a well-positioned defense supported by artillery and air support, and could not break into the perimeter.[94]

Due to the nature and scope of the operation, aircraft provided the bulk of fires for the latter portion of Cartwheel. Kenney's air force provided effective strikes in support of the airfield seizure at Nadzab, as well as the landings at Lae, Cape Gloucester, and the Admiralties. Kenney's air forces had been intermittently striking at Rabaul since January 1942. With the Nadzab airfield in Allied hands, his Fifth Air Force and RAAF aircraft were now in position to bombard Rabaul

[93]Dexter, 92-103, 292-297; Miller, *Cartwheel*, 200-202; Shaw and Kane, 291.

[94]Shaw and Kane, 291-292; Miller, *Cartwheel*, 352-355, 358-378; First Demobilization Bureau, 109-111

and render its harbor and airfields ineffective. Starting on 12 October, aircraft struck at Rabaul every day the weather permitted. Kenney combined high altitude strikes by B-24 bombers with low-level strikes by B-25s and RAAF aircraft. The campaign continued until early November when the RAAF took over Rabaul operations for Kenney so that the Fifth Air Force could focus its efforts on suppression of Japanese bases to the west on the New Guinea coast. His long-range fires would cover MacArthur's flank by protecting amphibious forces seizing Cape Gloucester on western New Britain. The existing airfield there would assist in containing Rabaul and more importantly, facilitate the advance west.[95]

The final neutralization of Rabaul would fall to Halsey's Airsols and the Navy's aircraft carriers. The threat to Rabaul convinced Admiral Mineichi Koga, Commander in Chief of the IJN's Combined Fleet to commit his only available reserve, his carrier aircraft from Truk, to defend Rabaul. Once the Bougainville airfields were complete, Airsols began striking Rabaul's harbor and airfields every day the weather permitted. Additionally, Halsey employed Navy carrier task forces to augment his efforts. On 5 November, a force of two carriers struck Rabaul with 97 planes. While the carrier aircraft did not sink any Japanese ships, they damaged several ships. More importantly, after this raid the IJN no longer considered Rabaul a safe port for large combatants and Koga ordered the heavy cruisers out of the area, never to return. A larger raid on November 11 involved five carriers launching 235 planes on the harbor. This raid sunk a destroyer, damaged several ships, and destroyed 56 Japanese aircraft. The attempt to use IJN carrier planes at Rabaul was costly to the Japanese. Over two weeks in November, the IJN lost 50 percent of their fighters, 85 percent of their dive-bombers, and 90 percent of their torpedo bombers. Airsols bombardment of Rabaul continued over the next few months and by February 19, Japanese aerial resistance ceased and the Allies dominated the skies. Without air cover, the

[95]Craven and Cate, 318-328, 332; Griffith, 139-142.

last surface ships left Rabaul in February, and the last submarine departed in April of 1944. Allied bombardment, at lower levels of intensity would continue through the end of the war.[96]

Analyzing Fires During the Isolation of Rabaul

MacArthur and Kenney were able to synchronize fires with maneuver forces more effectively than they had at Buna. First, they were able to provide and sustain sufficient artillery to the initial operations near Salamaua. Synchronizing fires with maneuver allowed MacArthur's forces at draw the bulk of Japanese combat power away from his objective at Lae. This left MacArthur's first objective relatively undefended, and allowed him to strike behind the Japanese force, forcing their withdrawal. As his forces advanced, planning for the airborne and amphibious assaults integrated both air support and artillery into planning, ensuring that each force had enough fires to accomplish their goals. As MacArthur advanced, Fifth Air Force aircraft struck Japanese airfields to suppress the Japanese ability to interfere with MacArthur's maneuvers.

Halsey, advancing on his axis toward Rabaul also synchronized his fires with his maneuver forces. Air strikes and naval gunfire preceded his amphibious landings at Empress Augusta Bay, the Green Islands, and Emirau. Other air strikes focused on Japanese air bases to destroy, neutralize, or suppress Japanese fighters and bombers, reducing their ability to interfere with his land and sea operations. On Bougainville, his major contested ground operation of the campaign, Marine and Army commanders synchronized artillery with the maneuver forces' deliberate defense of the perimeter. Overall Halsey's fires kept the Japanese from mounting an effective resistance to his operations. They could neither mass nor synchronize their fires and could not affect Halsey's force, nor effectively support their own maneuver operations.

[96]Sherrod, *History of Marine Corps Aviation in World War II*., 183-187; Morison, 325-328, 330-336.

Once ground forces secured and/or built airfields on the Huon Peninsula and Bougainville, MacArthur could unify the efforts of both Kenney's command and Halsey's Airsols against Rabaul. However, MacArthur deliberately shifted the focus of Kenney from Rabaul, to the Admiralties and western New Guinea by December. This split the efforts of MacArthur's two forces as they closed in on Rabaul. By this time in the campaign however, MacArthur could confidently split his efforts as Rabaul was sufficiently reduced. The main effort became supporting the advance past Rabaul to Cape Gloucester, the Admiralties, and setting conditions for his western New Guinea campaign.

Halsey, once ashore at Bougainville, was the supporting effort for the remainder of the campaign. He protected MacArthur's flank by cutting Rabaul off from support and besieging it by air. His force, even without the carrier air strikes, had sufficient combat power to reduce Rabaul and eliminate its usefulness to the Japanese. Over the next several months, Halsey's efforts focused on Rabaul, grinding down the Japanese ability to project air and sea power.

Through this portion of the campaign, the Allies were able to effectively assess the results of fires. The decreasing presence of Japanese aircraft and ships indicated that their efforts were eliminating the ability of the Japanese to counter MacArthur and Halsey's operations. Both Kenney's forces and Airsols had the technical capability to see the results of airstrikes, and could target their air missions effectively. On the ground at Salamaua and Bougainville, observers now understood the capabilities and limitations of their artillery and air support. They could adjust artillery fires in the jungle to gain the effects they required, and could mark targets for air strikes and avoid fratricide.

CONCLUSIONS

Conclusions

The Southwest Pacific Theater in World War II provides an example of the crucial relationship between fires and maneuver for an operational commander. The JCS tasked General

MacArthur and Admiral Halsey to work together and take the offensive in a secondary theater against a skilled and professional peer enemy. In the early stages of the campaign, this enemy possessed the ability to challenge Allied air superiority and sea control. Fires, in the form of field artillery and airpower, destroyed, neutralized, or suppressed Japanese targets to enable maneuver by air, land, and sea. Once the air forces gained air superiority, Allied troops, supported by artillery and air support, moved by air and sea and wrested key terrain from the Japanese. They occupied or constructed airbases from which they built combat power and prepared to advance to their next objective. These fires provided MacArthur and Halsey a decisive impact on operationally significant targets. To create this decisive impact, they required multiple sources of fires to compensate for the technical limitations of each system. Air and ground observers adjusted artillery onto targets and provide the accuracy needed to destroy the ubiquitous bunkers that the Japanese used as the core of their defenses, but except in the confines of the central Solomons, lacked the needed range. Individual aircraft types had strengths and weakness against various types of targets. Kenney's success lay in part by his ability to first identify the characteristics needed against specific targets, and then modify his existing systems to maximize their effectiveness. Further, they were able to mass the effects of fires on operationally significant target, so Japanese forces could not recover before friendly maneuver forces are able to gain and maintain their objectives.

At Buna, the initial attacks by MacArthur's forces could not penetrate the Japanese defense. His maneuver force lacked the ability to employ effectively their available fires. MacArthur did not commit additional American artillery to this operation, relying on the limited number of Australian howitzers on New Guinea. The jungle terrain made target identification difficult, however the arrival of Australian aerial observation aircraft partially mitigated this problem. Accurate identification of the targets helped but Australian howitzers lacked delay fuses, and could not destroy the Japanese bunker complexes. Aircraft had the firepower, but could

not land fires accurately enough to have the effect maneuver needed. The burden to generate an operational effect for the 32nd Division fell on a single 105mm howitzer and the infantry. Success at Buna campaign came not from the effective use of fires, but through dogged persistence by the infantry, who had to assault positions with limited fire support, and the attendant increase in casualties.

At the Bismarck Sea, MacArthur and Kenney were able to modify and employ his existing systems in a tactically innovative way and defeat the IJN. Kenney launched a coordinated attack on an operationally significant target and created a decisive and long-lasting effect on the Japanese. After this single engagement, the Japanese could no longer maneuver their forces by sea south of New Britain. This hampered Japanese logistics, and allowed MacArthur to maneuver to Lae by sea, once he built up sufficient combat power. The Japanese had permanently lost the initiative and were compelled to react to MacArthur's actions for the remainder of the campaign.

On New Georgia, Halsey took advantage of the terrain to place long-range artillery in position to suppress his objective until maneuver forces could land and move to seize it. As at Buna, Halsey's troops had difficulty employing air support effectively but began to work out procedures and identify the situations where they could employ it most effectively. Artillery faced the same target acquisition problems as those at Buna. On New Georgia however, the American force had a sufficient number of artillery pieces on hand, worked through their difficulties, and developed effective techniques to support XIV Corps maneuver across the island.

During the final stage of Cartwheel, the character of the operation changed. With Buna and the Munda airfield in Allied hands, MacArthur and Halsey could now select intermediate objective based on their operational needs, and avoid prolonged ground assaults against prepared positions. They bypassed Rabaul and bombarded it. MacArthur advanced around Rabaul to the west advancing through Lae-Nadzab on New Guinea, across the strait to Cape Gloucester, then to

the Admiralties. MacArthur and Halsey chose objectives to both avoid direct assaults on Japanese strongholds such as those faced at Buna and Munda, and position aircraft to place long-range fires on Rabaul and other critical Japanese bases. Halsey advanced up the Solomons in a similar fashion, going around Rabaul to the east, seizing the Treasury Islands, Empress Augusta Bay on Bougainville, the Green Islands, and finally Emirau. Each objective allowing him to effectively place more fires on Rabaul and cut its lines of communication to other Japanese bases. In the end, Rabaul and its almost 100,000 troops were left behind, effectively imprisoned and unable to affect the outcome of the war.

Implications

Cartwheel provides a useful starting point for further study in several areas. Pre-war doctrine made unwarranted assumptions on the utility of field artillery in the jungle. It failed to take into account how technological advances changed the capability of artillery. Aerial observation made target acquisition easier, and high angle fire combined with delay fuses allowed artillery to hit targets in dense vegetation. As the United States transitions from the past decade of combat in Iraq and Afghanistan, modern doctrine writers should ensure they do not make unwarranted assumptions, particularly about perceived limitations of current and proposed systems. The Southwest Pacific campaign exhibited many instances where commanders and their Soldiers, Sailors, Airmen, and Marines modified existing equipment as well as tactics, techniques, and procedures to accomplish the missions before them.

In another area ripe for further examination, American commanders enjoyed a range advantage for their fires systems, particularly artillery systems, over the equipment available to the Japanese. At Munda, this range advantage allowed Army and Marine long-range artillery to operate with near impunity after Airsols and air defenses contained the air threat. Current American cannon artillery systems are out-ranged by peer systems from France, Russia, and South Africa. The Cartwheel campaign demonstrates that a range disadvantage can have

operational, not just tactical effects on a force. Examining the total capabilities available to American Joint Force Commanders may help identify the tactical and operation implications of this limitation and whether this gap in capabilities is offset by other systems in the current inventory and guide future procurement.

Finally, operational success in the Southwest Pacific required commanders to use ground combat power and surface based joint fires to enable maneuver by air and sea forces. Currently in the Pacific, the United States is obligated by treaty to allies such as the Philippines, South Korea, and former enemy Japan. It must also fulfill the requirements of the Taiwan Relations Act. Examining how can ground combat power, particularly fires from the Army and Marines, can affect maritime operations, will assist future operational commanders in a maritime environment understand how ground combat power can assist them to prevail in their mission.

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